Northamptonshire County Council.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH,

For the Year 1898,

INCLUDING A

Summary of the Annual Reports of the District Medical Officers of Health,

BY

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County Medical Officer of Health.

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NORTHAMPTONSHIRE COUNTY COUNCIL.

Annual Report of the Medical Officer of Health,

FOR THE YEAR 1898.

I herewith have the honour to present the Second Annual Report of the Medical Officer of Health to the County Council of Northamptonshire, including a Summary of the Annual Reports of the Medical Officers of Health for Districts within the Administrative County.

In reference to the work of my Office, I may briefly summarise it by saying that, in addition to attending public enquiries in respect of Sewerage and Sewage Disposal at Higham Ferrers, Rushden, Ecton, Thrapston, Abington, and Irthlingborough, I also inspected for special reasons the Sewerage Systems or Sewage Works at Far Cotton, Finedon, St. James' (N'ton.), Kettering, Oundle, Rothwell, Towcester, and Earls Barton, as well as sources of river or stream pollution at Brackley, Wellingborough, Guilsborough, West Haddon, Long Buckby, Old Stratford, Little Irchester, and from the Northampton Borough Sewage Farm.

Questions of water supply at Coton, Pytchley, Potterspury, and Paulerspury came under notice and were reported on by me, and I made special reports on outbreaks of Enteric Fever and Diphtheria at Rushden and Guilsborough respectively. In addition to these matters, I had above sixty consultations with District Medical Officers of Health on various matters either personally or by letter.

On taking up my appointment at the beginning of 1898, I established a scheme by which, with the assistance of the District Medical Officers of Health, I could issue monthly returns

to them, the County Council, and others interested, showing the number of cases of infectious diseases notified in each town or village in the administrative county. I am glad to find from the Reports of many of the District Medical Officers of Health that they have found these Monthly Returns very valuable in sometimes enabling them to trace the origin of doubtful cases of disease, and in putting them on their guard against the spread of illness. I look forward, too, to the time when these returns may prove to be the foundation of useful records for purposes of comparison, and for ascertaining with greater accuracy the relative proportions of sickness to mortality.

A special report was presented to the Public Health Committee on the working of the Food and Drugs Acts in the County. The Committee, after careful consideration of this, recommended the County Council to raise the minimum number of samples to be taken by the Inspectors for analysis in each year from 120 to 250, and it was resolved accordingly.

With the sanction of the Public Health Committee, I also prepared a Memorandum on Part III. of the Public Health Acts Amendment Act, 1890, relating to 'Sanitary and other Provisions,' and issued the same to the Medical Officers of Health of those Districts in the County where this part of the Act had not been adopted. It is hoped that, on the advice given by their own Medical Officers of Health, the several District Councils which have not hitherto adopted that part of the Act may be induced to do so, and so make the administrative sanitary procedure of all the Districts within the County as uniform as possible.

Reports of Medical Officers of Health.

The Annual Reports of the District Medical Officers of Health for the year 1898 exhibit generally greater detail in the records of the public health conditions of the Districts to which they relate, than was observable in those for the preceding year but a few of them are still capable of improvement in this respect.

It is with considerable satisfaction that I am able to record an increase in the number of those Annual Reports which are now printed, as compared with the year 1897. The number of printed reports received this year is sixteen as compared with ten in the preceding year. It is, however, much to be regretted that all such reports are not printed, for records of so much importance with respect to the health of a community cannot receive proper attention unless a copy is supplied to each Member of a District Council, and this can be done readily only when the reports are printed. It is to be hoped that this matter will receive further and more favourable consideration in the future.

The Districts which have the Reports of their Medical Officers of Health printed are :—

1. Finedon	Urban	1. Crick	Rural
2. Kettering	,,	2. Gretton	,,
3. Kingsthorpe	,,	3. Hardingstone	,,
4. Raunds	,,	4. Kettering	,,
5. Rothwell	,,	5. Northampton	,,
6. Rushden	,,	6. Oundle	,,
		7. Oxendon	,,
		8. Potterspury	,,
		9. Thrapston	,,
		10. Wellingborough	,,

The Districts which have not the Reports of their Medical Officers of Health printed are :—

1. Brackley	Borough	1. Brackley	Rural
2. Daventry	,,	2. Brixworth	,,
3. Higham Ferrers	,,	3. Daventry	,,
4. Desborough	Urban	4. Easton-on-the-Hill	,,
5. Far Cotton	,,	5. Middleton Cheney	,,
6. St. James' (N'ton.)	,,	6. Towcester	,,
7. Oundle	,,		
8. Wellingborough	,,		

All but two of the reports were received by the end of February, and the last one, being for the Gretton Rural District, came to hand on March 23rd, 1899.

A large number of special reports were received during the year from District Medical Officers of Health, in respect mainly of prevalences of infectious sickness necessitating the closure of public elementary schools, and the record of these was most conveniently made in the monthly returns of infectious diseases.

Area and Population.

There are thirty Districts within the Administrative County of Northampton, of which 14 are Urban Districts, and 16 are Rural Districts.

The Urban Districts have a total area of 40,375 acres, and the Rural Districts of 543,824 acres, making together a total of 584,199 acres for the Administrative County.

Area in Acres of Urban Sanitary Districts.

Name of District.	*No. of Acres.*	*Name of District.*	*No. of Acres.*
Borough of Brackley...	3,849	Kettering	2,814
,, Daventry...	3,633	Kingsthorpe	2,018
,, Higham Ferrers...	1,945	Oundle	3,144
Desborough	2,400	Raunds	4,460
Far Cotton	410	Rothwell	3,638
Finedon	3,661	Rushden	3,778
St. James' (N'ton.) ...	360	Wellingborough ..	4,265

Area in Acres of Rural Sanitary Districts.

Name of District.	*No. of Acres.*	*Name of District*	*No. of Acres.*
Brackley	42,435	Middleton Cheney ..	13,888
Brixworth	62,648	Northampton ...	16,624
Crick	18,547	Oundle	57,771
Daventry	60,886	Oxendon	34,490
Easton-on-the-Hill...	6,341	Potterspury ...	19,915
Gretton	12,299	Thrapston	36,836
Hardingstone ...	32,515	Towcester	42,455
Kettering	49,338	Wellingborough ...	36,836

Population.—The population of the County is shown in the following table, the estimated populations being taken from the reports of the District Medical Officers of Health :—

Districts.	Census, 1891.	Estimated to Middle of 1898.	Increase.	Decrease.
Urban ...	79,525	109,353	29,828	
Rural ...	123,756	125,549	1,793	
Totals ...	203,281	234,902	31,621	

The net estimated increase of the population in the Administrative County since the Census of 1891 amounts to 31,621 persons. The increase is mainly in the Urban Districts, and, with but few exceptions, it appears that the population in the Rural Districts is a decreasing one.

With regard to the Rural Districts which show no definite decline in population, the following observations of their respective Medical Officers of Health are worthy of notice :—

Kettering Rural.—"The population of the District in the "middle of the year was, as near as can be calculated, about "11,500, the slight increase being chiefly in the villages of "Broughton and Burton Latimer, where many new houses have "been built."

Northampton Rural.—"In estimating the population for "the year, I have allowed for an increase in the village "of Abington, where building operations are now progressing, "but the other villages are stationary in this respect. Therefore, "the population of the district, which at the last census was "6,435, I now estimate at 6,554, or, deducting Berry Wood "Asylum, which is necessary in computing the various death and "birth-rates, 5,604."

Potterspury Rural.—"From recent enquiries I have made. "there is reason to believe that the decrease in the population

" of the district, revealed by the Census of 1891, has not been " maintained in the same ratio from year to year down to the " present time. I have, therefore, for the purposes of this report, " adopted the estimated population for 1897 as a basis of " calculation."

The Wellingborough Rural District is also credited with a substantial increase of population.

Births.

There were 6,647 births registered in the Administrative County during the year 1898, as against 6,761 births in the year 1897. Of these births, there were 3,404 in the Urban Districts, and 3,243 in the Rural Districts. Calculated on the respective total estimated populations, these figures represent a higher birth-rate for the Urban than for the Rural Districts ; but, at the same time, these rates are relatively low ones for the County, the birth-rate for the combined Urban Districts being lower than in any of the preceding eight years with tbe exception of the year 1891, and for the combined Rural Districts than in the years 1890 and 1894.

The average birth-rate of the whole Administrative County per 1,000 of population, and of the combined Urban and Rural Districts respectively, for the years 1890—98, is shown in the following table, together with, for purposes of comparison, the corresponding rates for England and Wales, and for the 33 large towns in England and Wales, taken from the Registrar-General's Returns :—

Districts.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.
Administrative County ...	**24·5**	**29·3**	**30·3**	**29·1**	**27·9**	**29·6**	**28·8**	**29·5**	**28·29**
Urban Districts	31·3	30·2	34·2	32·9	32·4	34·5	32·4	33·49	31·1
Rural Districts.	22·3	28·9	28·3	26·8	25·3	26·3	26·1	26·4	25·8
England & Wales	30·2	31·4	30·5	30·8	29·6	30·3	29·7	29·6	29·4
Large Towns in England & Wales	30·4	32·5	31·8	31·8	30·6	31·2	30·7	30·7	30·3

The birth-rate for the County is thus seen to be greatly below the like rate for England and Wales in the year 1898, although the rate for the Urban Districts is well above that for the 33 large towns in England and Wales.

The birth-rate varied in the Urban Districts from 14·3 per 1,000 of population in the Oundle District to 37·0 per 1,000 in the Borough of Higham Ferrers, while in the Rural Districts the variation was between 18·5 per 1,000 in the Oundle District and 33·8 per 1,000 in the Wellingborough District.

Arranged in the order of their Birth-rates the Urban Districts stand thus :—

	Per 1,000 of Population.		*Per 1,000 of Population.*
Higham Ferrers Borough	37·0	Rothwell	28·6
Rushden	36·9	Far Cotton	28·1
Kingsthorpe ...	34·4	Raunds	28·0
Kettering	33·8	Wellingborough ...	26·9
St. James' (N'ton.) ..	33·3	Brackley Borough	25·9
Finedon	29·2	Daventry Borough ...	25·1
Desborough ...	29·0	Oundle	14·3

The position of the Rural Districts in respect of their Birth-rates is as follows :—

	Per 1,000 of Population.		*Per 1,000 of Population.*
Wellingborough ...	33·8	Potterspury ...	24·3
Northampton ...	32·1	Hardingstone ...	24·2
Crick	29·2	Brixworth	23·3
Thrapston	28·3	Daventry	22·9
Middleton Cheney .	26·7	Easton-on-the-Hill...	21·8
Brackley	26·6	Oxendon	20·5
Towcester	25·9	Gretton	19·6
Kettering	25·8	Oundle	18·5

In respect of the foregoing tabulations, it is worthy of note that the first eight Urban Districts are the same, though in different order, as in the year 1897, and that the Urban District

with lowest birth-rate is the same for 1897 and 1898, while, among the Rural Districts, Wellingborough heads the list, and Oundle, Gretton, and Oxendon end it, in both years.

DEATHS.

General Mortality.—The total number of Deaths registered in the Administrative County during the year 1898 was 3,374, as against 3,559 in the year 1897, a mortality which, having regard to the increase of population in the Urban Districts, may certainly be regarded with some satisfaction. Of these deaths, 1,531 were registered as having occurred in the combined Urban Districts, and 1,843 as having occurred in the combined Rural Districts. Calculated on the respective total estimated populations, these figures give only a slightly higher Death-rate for the combined Rural Districts of the County than for the combined Urban Districts, as compared with the three immediately preceding years. This is an undoubtedly favourable feature of the mortality returns for the year 1898, and all the more so when it is seen that the mortality of infants under five years of age in the Rural Districts was over 2 per cent., of the total deaths in those districts, less than in the year 1897.

The average Death-rate of the whole Administrative County per 1,000 of population, and of the combined Urban and Rural Districts respectively, for the years 1890—98, is shown in the following table, together with, for purposes of comparison, the corresponding rates for England and Wales, and for the 33 large towns in England and Wales, taken from the Registrar-General's Returns :—

Districts.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.
Administrative County ...	**14·5**	**17·8**	**16·6**	**15·8**	**14·8**	**15·8**	**14·5**	**15·5**	**14·3**
Urban Districts	17·9	15·0	16·1	15·2	14·8	15·1	13·7	14·79	14·0
Rural Districts.	13·8	18·8	16·7	16·2	14·8	16·4	15·1	16·09	14·6
England&Wales	19·5	20·2	19·0	19·2	16·6	18·7	17·1	17·4	17·5
Large Towns in England & Wales	21·6	22·4	20·6	21·5	18·0	20·5	18·9	19·0	19·0

From this it will be seen that, though the death-rates for England and Wales and the 33 large towns therein are practically the same for the year 1898 as for 1897, the local death-rates are substantially lower for last year than for the one before. It is also observable that the total death-rate per 1,000 of population for the whole County, is lower than in any one of the eight preceding years, although the death-rate for the Urban Districts is higher than in the year 1896, and for the Rural Districts than in the year 1890.

The following are the more noteworthy of the observations made by the District Medical Officers of Health in their Annual Reports :—

Brackley Borough.—"The death-rate—calculated on an "estimated population of 2,700—was 10·3 per 1,000. This com- "pares very favourably with the rate for the previous year (20·9), "and with the average rate for the last five years, viz., 14·2. As "I pointed out in a former report, we are likely to have a widely "fluctuating death-rate from year to year on account of the small "population with which we have to deal. In 1897, we had the "highest on record, and last year the lowest."

Higham Ferrers Borough.—"The death-rate is very satis- "factory, and when considered more in detail, it shows in a still "more favourable light. Thus, of the 27 deaths only 10 "occurred between the ages of 1 year and 65, and of the 9 "children that died under one year no less than five were "prematurely born, and whose death in each case was due to this "accidental circumstance. So that if we eliminate these, the "death-rate would be brought down to 11 per 1,000."

Rushden Urban.—"The increased death-rate of the present "year has been chiefly in young children, * *. Several of "these deaths were of babies prematurely born, some of them "having only lived five minutes."

Daventry Rural.—In referring to the death-rate of 15·2 per 1000, "It is a higher death-rate than in the previous year, which

" was exceptionally low at 12·8 per 1,000, but compares favour-
" ably with that of 1896 which was 16·4 per 1,000."

Hardingstone Rural.—Speaking of the death-rate at 14·2 per 1,000, "This is the lowest mortality since 1884, except in the " year 1894, when the mortality was 13·8, and out of the 16 " Rural Districts in this County there were only four last year " with a lower mortality than this. There were 10 deaths in " persons over 80 years of age."

" The most marked feature in the death returns is the " number of deaths from cancer in the Brafield District. I give " the figures as follows :—

"	Hardingstone District	...	1 death from cancer.
"	Wootton "	...	5 deaths " "
"	Brafield "	...	9 " " "

" In other words, out of 22 deaths in people over 60 years of " age (when cancer is most prevalent), five died of cancer in the " Wootton District to nine in the Brafield District."

Northampton Rural.—Speaking of the death-rate of 16·2 per 1,000 as compared with 17·3 per 1,000 in 1897, "This is still " a somewhat high death-rate. Out of sixteen rural districts in " Northamptonshire, ten had a lower death-rate than this last " year. There were more deaths this year in people over sixty " years of age (41 to 31), and less deaths in children under five " years old (25 to 30). Eleven deaths were of persons over " eighty years old."

" The mortality in Abington and Kislingbury districts was " much the same as in former years ; but there was a marked " decrease in the Duston District, only 13 deaths, instead of 24 " in the previous year. The largest number of deaths (19) was " in the village of Bugbrooke,—a very high mortality for a " population of only 850 (22·4 per 1,000) ; but 13 of these were " in people over sixty years of age, and not from any especial " cause."

The death-rate varied in the Urban Districts from 9·3 per 1,000 of the population in the Oundle District, to 16·0 per 1,000 in the Rushden District. In the Rural Districts the variation in the death-rate was from 11·2 per 1,000 in the Gretton District, to 16·4 per 1,000 in the Crick District.

Arranged in order of their death-rates the Urban Districts stand thus :—

	Per 1,000 of Population.		*Per 1,000 of Population.*
Oundle	9·3	Desborough ...	13·4
Brackley Borough .	10·3	Higham Ferrers Borough ..	13·5
Far Cotton	10·5	Kingsthorpe ...	14·4
Raunds	10·9	Kettering ...	14·5
Wellingborough ..	11·7	Daventry Borough...	15·9
Finedon ...	12·6	Rushden	16·0
St. James' (N'ton.)	13·1		
Rothwell	13·2		

The position of the Rural Districts in respect of their death-rates is as follows :—

	Per 1,000 of Population.		*Per 1,000 of Population.*
Gretton	11·2	Hardingstone ...	14·2
Oxendon	11·8	Brixworth	14·6
Wellingborough ..	11·8	Potterspury ...	14·6
Kettering	13·3	Towcester	14·7
Middleton Cheney ..	13·3	Daventry	15·2
Easton-on-the-Hill .	13·9	Brackley	16·0
Oundle	13·9	Northampton ..	16·09
Thrapston	14·1	Crick	16·4

Infantile Mortality.—The death-rate of infants under one year of age during the year 1898, was only fractionally less than that for the year 1897, in the Administrative County. The average infant-mortality rate per 1,000 births for the years 1890—97, in the Administrative County, is 130·6 ; during the year 1898, the rate was 133·59. The chief point of difference in

respect of the like mortalities in the years 1897 and 1898 lies in the fact that, while the mortality in the rural districts was considerably above the average in the former year, it has been lower in the latter year than in any of the preceding eight years; on the other hand, the infant-mortality in the urban districts during 1898 was considerably higher than in any of the years 1890–97, with the single exception of the year 1890. The mean rate for the combined urban districts during 1890–97 is 145·5 per 1,000 births; in 1898, the rate was 158·0 per 1,000 births. The mean rate for the combined rural districts during 1890–97 is 120·8 per 1,000 births; in 1898, the rate was only 107·9 per 1,000 births. Thus, the infant-mortality for the rural districts stands for the year 1898 in the most favourable light.

The average infantile death-rate for the whole Administrative County per 1,000 births, and of the combined Urban and Rural Districts respectively, for the years 1890—98, is shown in the following table, together with, for purposes of comparison, the corresponding rates for England and Wales, and for the 33 large towns in England and Wales, taken from the Registrar-General's Returns :—

Districts.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.
Administrative County ...	**138**	**137**	**125**	**132**	**125**	**135**	**119**	**134**	**133**
Urban Districts	169	153	142	140	143	143	132	142	158
Rural Districts	129	130	114	125	112	124	108	125	107
England & Wales	151	149	148	159	137	161	148	156	160
Large Towns in England & Wales	171	167	163	181	152	182	168	176	178

From this it will be seen that the infantile death-rate per 1,000 births for the Administrative County was well below that of England and Wales, as also was the like mortality for the combined Urban Districts below that of the large towns, though not to so great an extent as it was in the year 1897.

More attention to the subject of infantile mortality is observable in the reports of the District Medical Officers of Health than in the previous year.

The Medical Officer of Health for the Desborough Urban District writes :—" On examining the returns of the Registrar of " Deaths for the District, I find that the 15 deaths below the age " of one year were distributed over the twelve months as follows:— " 1 in February, 3 in March, 1 in April, 1 in August, 4 in " September, 3 in October, 1 in November, 1 in December. Of the " deaths which occurred in the early part of the year, the causes " were chiefly chest affections, Bronchitis alone claiming 3 " victims ; in the Autumn, intestinal affections, chief amongst " them Diarrhœa, were responsible for the greater number. " With respect to the causes of Infantile Diarrhœa in particular, " experimental researches tend to show that we may look to " bacteriology for a solution. Thus it will be seen how very " necessary it is when infants are fed on artificial food, which " should mainly consist of milk, that the greatest care be taken " in securing the same against the infection of germs from which " bacteria develop. Much can be done in attaining this end by " the sterilising or boiling of milk, and its subsequent retention " in the household under the most cleanly conditions."

In reference to the high rate of mortality among infants under one year of age in the Kingsthorpe Urban District, the Medical Officer of Health says :—" I would suggest to the Council " the advisability of appointing a trained nurse to visit the homes " of the Semilong District, to give advice to the mothers as to " feeding and general hygiene of young children, also to give " lectures in the District, as has been done by the County Council " in the Rural Districts. A large proportion of these deaths " were certified as due to Marasmus, which merely states that it " was a wasting disease, most probably caused in many instances " by improper feeding."

As in Rushden Urban District, already referred to under the heading of ' General Mortality,' so in the Daventry Rural District

the Medical Officer of Health reports a considerable mortality from immaturity:—"The Infant Mortality under one year was "105 per 1,000 Births; this appears high for a Rural District, "but, of the 33 deaths that occured under one year, I notice in "the returns that 9 infants died during the first 24 hours of life "from Premature Birth or similar cause."

The Medical Officer of Health for the Northampton Rural District reports that "The number of deaths in infants under "one year of age was 18, against 20 in the previous year, giving "a death-rate of 98 per 1,000 births registered, compared with "126 in 1897. This is a very favourable mortality; last year, "only five out of the sixteen Rural Districts had a lower rate."

The Medical Officer of Health for the Potterspury Rural District also reports that "The infantile death-rate is unduly "high; not owing, however, to insanitary causes, but to mortality "amongst infants of ages ranging from a few hours to a few "weeks, who were either prematurely born or deficient in "vitality."

I would again call attention to the great desirability of printed *cards* being drawn up and distributed in all districts where infantile mortality is excessive, giving clear directions as to the Management and Feeding of Infants. As a basis for this purpose, I appended a set of "Directions" to my last Annual Report. Such "Directions" might also be usefully put into the hands of the Registrars of Births, for distribution to persons registering the births of infants.

The infantile-mortality rate varied in the Urban Districts from 25 per 1,000 births in the Oundle District, to 200 per 1,000 births in the Far Cotton District. In the Rural Districts the variation in this mortality was from 85 per 1,000 births in the Wellingborough District, to 166 in the Easton-on-the-Hill District.

Arranged in order of their Infantile-Mortality rates the Urban Districts stand thus :—

	Per 1,000 Births.		*Per 1,000 Births.*
Oundle	25	Desborough	141
Brackley Borough ...	71	St. James' (N'ton.) ...	155
Finedon	113	Kettering	161
Higham Ferrers Borough ...	121	Kingsthorpe	184
Raunds	130	Rothwell	184
Daventry Borough ..	131	Rushden	191
Wellingborough ...	135	Far Cotton	200

The position of the Rural Districts in respect of their Infantile-Mortality rates is as follows :—

	Per 1,000 Births.		*Per 1,000 Births.*
Wellingborough ...	85	Brixworth	108
Thrapston ...	90	Oxendon	115
Hardingstone ...	98	Towcester	117
Northampton ...	98	Crick	126
Middleton Cheney ..	100	Kettering	134
Oundle	103	Gretton	151
Daventry	105	Potterspury	160
Brackley	106	Easton-on-the-Hill ...	166

Phthisis Mortality.—The number of deaths registered in the Administrative County as due to phthisis was 247, as against 251 in the year 1897. Curiously enough, the number of these deaths occurring in the Urban Districts was the same in both 1897 and 1898, namely 116, so that the reduction of four deaths in 1898, as compared with the preceding year, was in the Rural Districts. Of the total deaths from phthisis, 9·7 per cent. were among children under five years of age, as against 6·0 per cent. in the year 1897. The total phthisis death-rate for the County was 1·05 per 1,000 of the population ; for the combined Urban Districts, 1·06 per 1,000 ; and for the combined Rural Districts, 1·04 per 1,000.

The following table shows the phthisis death-rate per 1,000 of the population for the whole Administrative County, and for the combined Urban and Rural Districts respectively, for the four years 1895—98 :—

Areas.	Phthisis.	1895.	1896.	1897.	1898.
Administrative County.	No. of Deaths.	**281**	**249**	**251**	**247**
	Rate per 1,000.	**1·26**	**1·1**	**1·09**	**1·05**
Combined Urban Districts.	No. of Deaths.	140	107	116	116
	Rate per 1,000.	1·56	1·11	1·16	1·06
Combined Rural Districts.	No. of Deaths.	141	142	135	131
	Rate per 1,000.	1·06	1·1	1·04	1·04

It is very satisfactory to find from the reports of the Medical Officers of Health for the several Districts within the County that the subject of Phthisis is receiving very considerable attention at their hands, and that the communities they serve are having sound advice tendered them.

The Medical Officer of Health for the Borough of Daventry writes in respect of Tubercular Diseases:—"In 1893, when 17 "deaths occurred from these diseases, I commented somewhat at "length upon the communicability from man to man and from "animal to man of 'consumptive' diseases, advising certain pre- "cautionary measures to be adopted, and, in view of the great "attention which this subject has been receiving of late, I cannot "impress you too highly with the importance of it."

The Medical Officer of Health for the Borough of Higham Ferrers says, "The death-rate from phthisis remains for the sixth "year at 1·5 per 1,000, which is too high considering the natural "health advantages of the town." This remark must further

be read in connection with his comments on the condition of many of the cottages in the Borough, which appear under the heading of 'Dwelling-houses and Over-crowding' in this report.

From the Desborough Urban District come the following observations:—"Amongst a population for the most part engaged " in factory pursuits, there will always be a susceptibility to the " insidious attacks of this infectious disease; but, under healthful " conditions,—plenty of air and light, dwellings free from damp, " wholesome food and drink,—the ravages of this terrible scourge " may be effectually minimised if not entirely checked. In this " connection, it will serve a useful purpose to point out how very " insanitary the practice is of factory operatives keeping on their " aprons after leaving work, and even neglecting to discard them " when at meals. These aprons must contain innumerable " microbes of diverse characters, which easily find their way into " the lungs and stomach, with the result, too often observed, " that chest and gastric affections are produced. Obviously, " therefore, it would be wise for every man and woman on leaving " the factory or workshop for home, to at once lay aside at least " the apron."

The following comments are from the Finedon Urban District:—" Phthisis is a preventable disease. It is not as is " popularly supposed 'hereditary,' though the narrow chest and " weakly physique, so favourable to the development of the " germs of the disease, are. It is due to a specific germ, and " may be contracted from the following sources: the dry " expectoration of persons suffering from the disease, the milk " of animals suffering from the disease, and the under- " cooked flesh of animals so suffering. It cannot be contracted " from the breath of persons suffering from the disease, nor from " the moist expectoration. Our means of prevention are: the " careful inspection of the meat and milk supplies, the " destruction of the expectoration of persons suffering from the " disease, the encouragement of physical exercise to develope the " narrow chests and improve the general physique of our weakly " ones, and the improvement of the sanitation and ventilation of " the habitations of both man and beast."

From the Kettering Urban District comes the information that "The deaths from Phthisis have been almost identical in number "for the last three years, notwithstanding the rapid increase in "the population, and considerably less than in former years."

The Medical Officer of Health for the Raunds Urban District writes thus:—"In some of my monthly reports I have called "your attention to the great absence of this terrible disease, "which is responsible for more deaths than any other disease in "Europe, and against which I am glad to say a campaign is "about to be begun, or in fact has begun already, and I am "convinced that it is preventable to a great extent. One would "be apt to come to the conclusion that Raunds, lying as it does "so low down in the valley, and exposed to the fogs and dampness, "would be the very place suitable for the propagation and "growth of the consumption bacillus; but I am glad to say that "statistics prove that such is not the case, and I must say that "in all my experience at home and abroad I have never seen a "town of this size so free from this scourge, which I hope to "see fought successfully all over the world."

From the Rushden Urban District it is reported that "There "were twenty-five deaths from Phthisis. It is probable that "compulsory measures will soon be in force to guard the public "against contracting this disease through their milk supply. It "must be borne in mind, that overcrowding, damp, insufficient "light, and dusty occupation, are predisposing causes."

The Medical Officer of Health for the Thrapston Rural District writes as follows:—"The opinion that this is really an "infectious disease rather than hereditary has been steadily "gaining ground of late years, and the best hope of diminishing "the mortality lies first in improving the homes of the people, "especially with regard to overcrowding, ventilation, and subsoil "drainage; and second, more care taken that meat and milk (the "latter more especially) are free from disease. Special directions "to disinfect all sputa, &c., from patients, are always given by "Medical Attendants, and in addition, I consider that any house

" in which a death has taken place should be visited by your " Inspector, and the occupier induced to cleanse and disinfect as " if any other infectious disease, Scarlatina for example, had " taken place. It is true we have no legal power to enforce this, " but much may be done by suitable representations."

The phthisis death-rate varied in the Urban Districts from 0·0 per 1,000 of population in the Rothwell District to 2·08 per 1,000 in the Rushden District. In the Rural Districts, the variation in this mortality was from 0·0 per 1,000 in the Crick and Middleton Cheney Districts to 1·78 per 1,000 in the Hardingstone District.

Arranged in order of their Phthisis death-rates, the Urban Districts stand thus :—

	Per 1,000 *of Population.*		*Per* 1,000 *of Population.*
Rothwell	0·0	Desborough ..	1·09
Far Cotton	0·23	Kettering	1·1
Raunds	0·48	Brackley Borough...	1·11
Kingsthorpe ...	0·86	Finedon	1·42
Wellingborough ...	0·91	Higham Ferrers Borough ...	1·5
St. James' (N'ton.)	1·0	Rushden	2·08
Daventry Borough ..	1·01		
Oundle	1·07		

The position of the Rural Districts in respect of their Phthisis death-rates is as follows :—

	Per 1,000 *of Population.*		*Per* 1,000 *of Population.*
Crick	0·0	Oxendon	0·64
Middleton Cheney ...	0·0	Towcester	0·78
Daventry	0·29	Oundle	0·89
Brixworth	0·49	Wellingborough ...	0·9
Gretton	0·59	Thrapston	1·14
Easton-on-the-Hill ..	0·6	Potterspury ...	1·19
Kettering	0·6	Northampton ...	1·59
Brackley	0·64	Hardingstone ...	1·78

Respiratory Diseases Mortality.—The number of deaths registered as having occurred during the year in the Administrative County from bronchitis, pneumonia, and pleurisy, amounted to 472, as against 560 in the year 1897. Of these deaths, 222 were in the Urban Districts, and 250 in the Rural Districts. The great diminution of these deaths in the year 1898, as compared with 1897, was in the Rural Districts, for while there were only ten fewer deaths in the Urban Districts than in 1897, there was a difference of 78 deaths between the two years in the Rural Districts. Of the total deaths from bronchitis, pneumonia, and pleurisy, 212, or 44·9 per cent. were recorded as being children under five years of age: of these, 124, or 58·5 per cent. were in the Urban Districts, and 88, or 41·5 per cent. were in the Rural Districts.

The following table shows the death-rates from respiratory diseases per 1,000 of the population for the whole administrative county, and for the combined urban and rural districts respectively, for the four years 1895—98:—

Areas.	Respiratory Diseases.	1895.	1896.	1897.	1898.
Administrative County.	No. of Deaths.	491	414	560	472
	Rate per 1,000.	2·21	1·84	2·44	2·0
Combined Urban Districts.	No. of Deaths.	205	167	232	222
	Rate per 1,000.	2·28	1·74	2·32	2·03
Combined Rural Districts.	No. of Deaths.	286	247	328	250
	Rate per 1,000.	2·16	1·91	2·54	1·99

The death-rate for Respiratory Diseases varied in the Urban Districts from 0·83 per 1,000 of population in the Borough of Brackley, to 3·2 per 1,000 in Rothwell District. In the Rural Districts, the variation in this mortality was from 1·08 per 1,000

of population in the Oxendon District, to 3·7 per 1,000 in the Crick District.

Arranged in order of their death-rates for Respiratory Diseases, the Urban Districts stand thus :—

	Per 1,000 *of Population.*		*Per* 1,000 *of Population.*
Brackley Borough ...	0·83	St. James' (N'ton.)	2·16
Far Cotton	0·93	Kettering ..	2·35
Finedon	0·95	Higham Ferrers Borough ...	2·5
Wellingborough ...	1·29	Daventry Borough .	2·53
Oundle	1·43	Rushden	2·58
Kingsthorpe ...	1·8	Rothwell	3·2
Desborough ...	1·91		
Raunds	1·95		

The position of the Rural Districts in respect of their death-rates from Respiratory Diseases is as follows :—

	Per 1,000 *of Population.*		*Per* 1,000 *of Population.*
Oxendon	1·08	Wellingborough ...	2·22
Middleton Cheney ...	1·14	Northampton ...	2·29
Brackley	1·15	Potterspury... ...	2·38
Easton-on-the-Hill ..	1·21	Thrapston	2·47
Daventry	1·45	Towcester	2·51
Brixworth	1·47	Kettering	2·69
Hardingstone ...	1·54	Gretton	2·97
Oundle	1·79	Crick	3·7

General Zymotic Mortality.—The total number of deaths registered in the Administrative County during the year 1898 as due to zymotic diseases was 360, as against 374 in 1897. Of these deaths, 211 occurred in the Urban Districts, and 149 in the Rural Districts. Of the total deaths from the zymotic diseases, 252 or 70·0 per cent. were children under five years of age; of these 65·0 per cent. were in Urban Districts, and 35·0 per cent. were in Rural Districts.

As in the report for the year 1897, I have included all mortalities from measles, whooping-cough, and diarrhœa, though these are not ordinarily notifiable diseases.

The following table shows the total general zymotic mortalities for the Administrative County, and for the combined Urban and Rural Districts respectively, for the four years 1895—1898:—

Areas.	General Zymotic Diseases.	1895.	1896.	1897.	1898.
Administrative County.	No. of Deaths.	**304**	**410**	**374**	**360**
	Rate per 1,000.	**1·37**	**1·82**	**1·63**	**1·53**
Combined Urban Districts.	No. of Deaths.	147	223	206	211
	Rate per 1,000.	1·63	2·32	2·06	1·92
Combined Rural Districts.	No. of Deaths.	157	187	168	149
	Rate per 1,000.	1·18	1·45	1·3	1·18

The general zymotic mortality rate was, thus, below the like rates for the two preceding years.

The Urban Districts whose zymotic death-rates exceeded the same mean rate for the combined urban districts were the Borough of Daventry, Finedon, St James' (N'ton.), Kingsthorpe, and Rushden. Of these, the two with the heaviest rates were St. James' (N'ton.), and Rushden, in neither of which is there official notification of infectious sickness.

The Rural Districts whose like death-rates exceeded the rate for the combined rural districts were Brixworth, Crick, Northampton, Potterspury, Towcester, and Wellingborough.

The general zymotic death-rate varied in the Urban Districts from 0·0 per 1,000 of population in the Borough of Brackley, to 3·5 per 1,000 in St. James' (N'ton.). In the Rural Districts, the variation in this mortality was from 0·0 per 1,000 of population in the Easton-on-the-Hill District, to 2·47 per 1,000 in the Crick District.

Arranged in order of their death-rates from Zymotic Diseases, the Urban Districts stand thus :—

	Per 1,000 *of Population.*		*Per* 1,000 *of Population.*
Brackley Borough ...	0·0	Far Cotton	1·64
Raunds	0·48	Desborough ...	1·91
Higham Ferrers Borough ...	1·0	Kingsthorpe ...	2·19
Kettering	1·07	Finedon	2·61
Oundle	1·07	Daventry	2·79
Wellingborough ...	1·29	Rushden	3·08
Rothwell	1·37	St. James' (N'ton.)	3·5

The position of the Rural Districts in respect of their death-rates from Zymotic Diseases is as follows :—

	Per 1,000 *of Population.*		*Per* 1,000 *of Population.*
Easton-on-the-Hill...	0·0	Thrapston	0·95
Hardingstone ...	0·23	Kettering	1·04
Oundle	0·38	Potterspury ...	1·19
Gretton	0·59	Towcester	1·3
Brackley	0·64	Northampton ...	1·41
Middleton Cheney ...	0·76	Brixworth	1·71
Oxendon	0·86	Wellingborough ...	2·46
Daventry	0·87	Crick	2·47

Special Zymotic Diseases and Mortality.

Complete and exact information as to the extent to which the zymotic diseases may prevail in the County is still unobtainable, owing to the neglect of the Borough of Brackley, and the Urban Districts of St. James' (N'ton.) and Rushden, to adopt the Infectious Disease Notification Act. I regret to have to add that, so far as I can discover, no one of these Districts shows any disposition, in this respect, to take its proper place in securing the uniform administration of public health enactments in the County. Under these circumstances, it is still impossible to present correct statistical information as to the prevalence of zymotic sickness among the several districts.

Small Pox.—I am glad to be again able to report that no case of small-pox has come under notice in the County. That this happy immunity from the disease is likely to long continue, is unfortunately outside the range of ordinary probabilities.

Scarlet Fever.—There was a very great prevalence of this disease throughout the County during the year 1898, there having been 1,397 known cases, as against 1,131 cases in the year 1897. The only districts which appear to have been entirely free from the disease were the Borough of Brackley and the Rural District of Crick. The total scarlet-fever prevalence amounted approximately to a sickness-rate of 0·6 per cent. of the total estimated population of the County; in the Urban Districts, the rate was 0·74 per cent., and in the Rural Districts, 0·45 per cent. of the respective estimated populations. The total number of deaths from the disease in the County was 41, or 3 per cent. of the cases, as against 57, or 5 per cent. in the year 1897; of these deaths 26, or 3·2 per cent., of the recorded cases occurred in the Urban Districts, while only 15, or 2·5 per cent., of the recorded cases were in the Rural Districts. These figures are indicative of a large prevalence of scarlet-fever in the County, but of a much milder type than formerly.

From the report of the Medical Officer of Health for the Borough of Daventry, it appears that the spread of scarlet-fever in that place was associated with some difficulty in the matter of hospital isolation for the sick, which it would be well for the Borough Council to take seriously into consideration, so that the means at their disposal for controlling disease may be more generally made use of. The report states that "The first case "of scarlet-fever was notified in July, in a child living in "Waterloo. The origin of the disease was obscure. Seven "other cases occurred during the month, six in August, seven in "September, six in October, and one in November. With strict "isolation under proper sanitary conditions, it is probable that "the disease would have been stamped out much more quickly "than was the case. In two instances, houses in which the

" disease occurred were reported as very much overcrowded ; in " neither, however, was I able to gain admission for the patients " to the Sanatorium, but in one instance the Sanitary Authority " 'boarded-out' all the unaffected children (except the infant " who subsequently contracted the disease) so as to relieve the " overcrowding, and the undertaking was successful as far as " they (the unaffected children) were concerned. In the other " instance, eight persons slept in two small bedrooms, three of " whom were ill with the disease (one being allowed by the " parent to run out of doors whilst in the peeling stage), and, in " spite of this and an order of a Justice for the removal of the " affected persons to the Sanatorium, they were allowed to remain " in their overcrowded condition. The Urban Sanitary Authority " considered that, because the cases were paupers, they came " under the jurisdiction of the Rural Sanitary Authority who " refused to act, so between the two stools the matter fell to the " ground, and the offenders against the Public Health Act were " allowed to escape without punishment. It is highly desirable " that a definite understanding should be come to between these " two Authorities so as to avoid a recurrence of such dangerous " behaviour. Fortunately of the 28 cases of scarlet-fever " notified, only one terminated fatally."

The Medical Officer of Health for the Borough of Higham Ferrers says :—" A few cases of scarlet-fever occurred in June, " but this disease did not spread to any extent."

On the other hand, the Medical Officer of Health for the Far Cotton Urban District reports that " Scarlet-fever was very " prevalent during the latter months of the year, and no less " than 52 cases were notified ; the type of disease was, however, " generally of a mild nature, and no deaths were due to it. In " only a few cases were patients removed to hospital."

The Medical Officer of Health for the Finedon Urban District reports that " The cases of scarlet-fever were the " continuation of the epidemic of that disease which began in " the last quarter of the previous year, and which is happily " now a thing of the past. One case proved fatal."

The Medical Officer of Health for the St. James' (N'ton) Urban District says:—" The epidemic of Scarlatina was of a " mild character, no deaths occurred from it and it was equally " distributed in the two parishes. One case was removed to the " Wootton Isolation Hospital." (Hardingstone Rural District.)

The Medical Officer of Health for the Kettering Urban District reports as follows:—" Scarlet-fever has been very " prevalent during the whole year. Cases have occurred in " almost every street in this town, and the disease has doubtless " spread chiefly from the slight cases, which in many instances " have not been reported to your Officers, either from the ignor- " ance or carelessness of the parents, until the disease had been " already communicated to others. Owing to the disease " being prevalent in so many parts of the town it was most " difficult to detect the offending parties; but in February, as " several cases were notified, all of them being attendants at one " school, I went to that school and examined every scholar, the " result being that I discovered one child actually "peeling," " and on visiting this child's home found two other children also " peeling. This family was, of course, at once isolated. By " means of a free use of the Isolation Hospital the disease was " fairly well held in check until September, when the illness " spread more rapidly, and several children were found who had " suffered from scarlet-fever without any precaution being taken, " the parents in all these cases pleading ignorance of the children " having been ill.

" One prosecution, followed by a conviction and the infliction " of a fine was instituted, and I think more care has been taken " since that time.

" The disease occurred as follows:—

" In January ...	5	May ...	18	September ...	19
" ,, February...	8	June ...	9	October ...	38
" ,, March ...	24	July ...	3	November ...	28
" ,, April ...	18	August ...	6	December ...	25

" Of the 201 cases exactly 100 were removed to the Isolation " Hospital. All the cases removed to the Hospital recovered, " and three of the remainder died. It speaks well for the " sanitary condition of the town generally that the disease was " of so mild a type, and that so very few deaths occurred out of " such a large number of cases.

" In all cases treated at home the rooms were carefully " disinfected, and the disinfecting apparatus at the Hospital has " been used for the infected articles, which were not destroyed. " This process has brought a large increase of work to your " Inspector during the last three months of the year."

From the Kingsthorpe Urban District report, it appears that " Although scarlet-fever was very prevalent in the District " during the Autumn and latter part of the year, only two deaths " occurred, the type of this disease being almost throughout of " a very mild character."

The Medical Officer of Health for the Oundle Urban District writes :—" In May, two cases of scarlet-fever occurred in the " Glapthorne Road. The infection was conveyed, most probably, " from a case at Warmington. At the end of the same month, " the disease appeared in Inkerman Yard. Fortunately the " disease was confined to one house, but, owing to lack of " means for properly isolating the patient, the disease attacked " in turn five members of the same family. In July, the disease " appeared again at the same house in Glapthorne Road. In " August, the disease broke out in the Benefield Road, and here, " from insufficient means of isolating the first case, the disease " spread to other members of the same family. At the end of " the same month, the disease appeared in New Street, and was " attended with fatal result in one case. In October, another " case occurred in New Street. In November, two cases occurred " in Mill Lane, and, in December, the disease appeared in New " Street. Scarlet-fever, therefore, has been in the town ever " since May in a sporadic form, fortunately, never assuming the " proportion of an epidemic. It is difficult to trace the channels

" of infection, but want of proper isolation and disinfection " accounts for a good deal."

The Medical Officer of Health for the Rushden Urban District says, " I was informed that there were several cases of " scarlet-fever which were not reported to me. Therefore, in " July I wrote the Council, ' As infectious cases are constantly " arising with which it is necessary to deal at an early stage, I " advise the putting in force of the Notification Act. Were it " in working it would be compulsory for parents to notify any " case to the Medical Officer.' "

The Medical Officer of Health for the Wellingborough Urban District writes, " There were 255 cases notified. The " epidemic was of a mild type and was spread all through the " year; in August, October, and November, the greatest number " of cases were notified. There were only nine deaths from this " disease. Thirty-four cases were treated at the Isolation " Hospital, and two deaths occurred, the cases being of a " malignant type."

" The scarlet-fever epidemic increased rapidly during two " or three months, but declined at the end of the year. It " has been very prevalent in this County, as well as being " universally so, owing it is supposed to the peculiarly dry " season."

The Medical Officer of Health for the Brackley Rural District says that " Only nine cases of scarlet-fever were notified, " and all were of the same mild type which has characterised " the disease in the district during the last few years, and which " mild nature renders the isolation of the cases difficult, as the " children, often complaining but slightly of illness, are allowed " to go about as usual."

From the Brixworth Rural District it is reported that " An " epidemic of scarlet-fever occurred in Spratton during the " Autumn months and spread rapidly owing to overcrowding

" and want of proper isolation. Spratton National Schools were " closed for some weeks in consequence. A case occurred at " Brixworth, the infection being traceable to Spratton; the " disease spread no further." One or two isolated cases occurred in the villages of Harlestone, Moulton, and Brington.

In the Daventry Rural District, it appears that " Scarlatina " appeared in 8 of the 27 Parishes, Flore and West Haddon with " six cases in each village having the greatest number; the only " death in the district from this disease occurred in Flore early in " September. Of the remaining cases, two were notified from " each of the following Parishes, Braunston, Long Buckby, " Weedon, Welton, Winwick, and Woodford-cum-Membris; in all " these cases the disease was of a mild type, and did not spread."

In the Easton-on-the-Hill Rural District " There were only " reported three cases of this disease. Two occurred at Colly- " weston, and one at Easton. The cases at Collyweston were in " a large isolated house, and refused to go to the infectious wards " of the Infirmary" (Stamford). " The one at Easton was removed to the Fever wards."

The Medical Officer of Health for the Gretton Rural District reports as follows :—" Thirty-one cases were notified " from Gretton village, and at different times throughout the " year I found other cases that were not notified. The first " cases occurred in May, and there was some difficulty in tracing " the origin of the outbreak, and it was only after several days " searching that I was able to find the first case, which had not " been reported. A lad named —J— suffered from what his " mother thought was measles, and after a short illness was then " allowed to run about, all the earlier cases had come in contact " with this lad either at play or at school; and the disease was " thus established in several parts of the village before I heard " anything of it. The dwellings of the working classes at " Gretton are many of them very old, and there were no facilities " for isolation in their own homes; and the Authority had made " no provision. I made an effort to get an isolated building to

" isolate some of the cases in, but could not get one. The " disease has existed in the village throughout the year, as " infection is spread from each case as it becomes convalescent. " No means exist for disinfecting the clothing or bedding other " than the imperfect method of burning sulphur in the rooms. " It was found to be impossible to confine the children as they " got better to their own houses, although every effort was made " to this end by the Inspector of Nuisances and myself. There " was a fresh importation of the disease later on in the year, " from an adjoining village, by four children who had what the " mother thought was Measles. No doctor was called in, and " they removed to Gretton whilst peeling freely, and mixed with " other children in the village. In searching for a cause for " some newly notified cases, I had information given me about " these children, and upon examining them I found them suffering " from discharges from the nose, in addition to the peeling. " Disinfectants were freely distributed, and all the cases were " visited and oral and printed instructions given as to the best " methods of treatment, etc., with a view to preventing a spread, " and I must say that in the majority of cases the poor people " loyally assisted, and where mischief was spread it was solely " because they had no possible means of isolating. It is very " satisfactory that only one death occurred, although many of " the cases were of a very severe type."

The following is the report from the Hardingstone Rural District in reference to the cases of infectious disease :—" Out of " these 25 cases, no less than 22 were cases of scarlet-fever, and " they were thus distributed :—Ten at Hardingstone, eight at " Wootton, and one each at Hackleton, Milton, Roade, and " Collingtree. Thus the great bulk of the cases occurred in the " two villages nearest to Northampton, and having most inter- " communication with that town where scarlet-fever has been " most prevalent during the whole year, so that there is little " doubt but that the contagion was mostly conveyed from that " centre ; in fact most of the cases were distinctly traced to it."

The Medical Officer of Health for the Kettering Rural District reports that " A considerable number of cases of scarlet-" fever of a mild type were notified from Cottingham in April and " May ; and two cases from Corby, one of which proved fatal— " the only death from this disease during the year in the district.

" Scarlet-fever was reported from Burton Latimer in July. " The removal of the earliest cases to the Isolation Hospital " appeared to be the means of stopping the outbreak. The same " thing happened in November with the same result; and on the " last day of the year another case occurred, which was at once " removed to the Hospital.

" This illness occurred in the parish of Weekley, when the " Hospital was again used with good results.

" Two occurred at Cottingham in October, one of which, a " domestic servant, came to Hospital, and there was no extension " of the disease.

" Two cases also occurred in Grafton Underwood in " November, but as the house in which the patients lived was " separated from all others, the patients were well isolated with-" out any spread of the illness.

" In all, 27 cases were notified, with one death."

The Medical Officer of Health for the Northampton Rural District reports that " Most of the cases of scarlet-fever (21) " were notified in Duston. They almost all occurred in the " months of July and August, and the disease first appeared in " children attending School. It was my opinion at the time that " the disease was brought to the Church Sunday School by " children from St. James' End," from a district, that is, wherein there is no notification of infectious disease, " where there has " been a great deal of this disease. It was fortunately of a very " mild type, and no deaths occurred from it.

" Six cases were notified at Abington, which is now con-" tinuous with the town of Northampton, and most of the

" children attend the Stimpson Avenue Schools, where there has " been a good deal of scarlet-fever amongst the scholars. It " was in this village that the only fatal case happened.

" One case was notified at Weston Favell, but it did not " spread farther; and three cases were notified at Heyford at " different times. One case occurred at the school-house in the " latter village, but by closing the schools for a short time, and " getting the master to take temporary lodgings, the disease was " arrested."

In the Oundle Rural District, it appears that " Scarlet- " fever was prevalent in Warmington to some extent during a " great part of the year, but of a mild type," and that at Ashton, " cases of scarlet-fever were also seen in the parish, but did not " spread beyond the two houses first attacked." Speaking of the whole district, the Medical Officer of Health says that " Sixty-seven cases of scarlatina were reported, but only one " proved fatal, which shows the mildness of the disease."

The following is the report from the Oxendon Rural District:—" One case of scarlet-fever occurred at Dingley, 2 at " Stoke Albany, and 12 at Wilbarston. The cases of scarlet- " fever at the latter place occurred in an epidemic form, and " were probably derived from one another. The origin of the " outbreak was probably through a case not being detected and " isolated in the first instance, but every care was taken to guard " against infection, and frequent visits of inspection and enquiry " made. The Schools were closed during the prevalence of the " outbreak, and disinfectants provided by the Council, and in " one case of negligent exposure proceedings were threatened. " No further cases occurred, and under the circumstances we " were fortunate to have limited the extent of the outbreak. " There were 2 deaths. The 2 cases at Stoke Albany occurred " in one house, and were probably conveyed from Wilbarston."

The Medical Officer of Health for the Potterspury Rural District writes that " Scarlet-fever prevailed more or less

" throughout the district during the past year. Seventy-nine " cases were notified, distributed as follows, viz. : Paulerspury, " 68, Hartwell, 3, Cosgrove, 4, Ashton, 1, Alderton, 1, " Deanshanger, 2. Towards the end of September it became " epidemic at Paulerspury, owing to the mild type of the disease, " the attendance at school of unrecognised cases, the impossibility " of isolation in the cottages of the poor, and the uselessness of " disinfectants as a preventive, although tried on a liberal scale."

The report for the Thrapston Rural District states that " There has been a considerable amount of mild scarlatina during " the last six months scattered through many villages, but there " has not been a fatal case. Some difficulty was experienced in " getting the cases notified to me. Prosecutions were ordered " in every case which could be well established, and fines were " inflicted by the Magistrates."

The report of the Medical Officer of Health for the Towcester Rural District is as follows :—" One hundred and five " cases of scarlatina were notified, with two deaths occurring " therefrom,—one under 5, one over, both in the Abthorpe sub- " district. The chief parishes to suffer were Abthorpe and " Tiffield, in both of which villages the schools were closed for a " time. In the parish of Pattishall, which includes Pattishall, " Astcote, and Eastcote, there occurred several cases. And in " Towcester in December, isolated cases occurring in different " parts of the town, and it being found that children had attended " the National Schools (as was also the case at Abthorpe) " desquamating, the Schools were closed as a precautionary " measure. In most cases, the origin of the disease could be " traced to a carelessness on the part of parents of like nature, " and which is really criminal. The inter-communication " between villages and districts, the want of care of this culpable " kind exhibited by the guardians of children suffering from the " disease, peoples' own carelessness in visiting infected houses, " the fact that we have no means of isolation of first cases, " make it in my opinion hopeless under present conditions to

" expect any immunity of the district from so transmissible a " disease as scarlatina."

Diphtheria and Membranous Croup.—Although there was seemingly a greater prevalence of Diphtheria in the County during the year 1898 than in 1897, there was no such general prevalence of the disease as there was of scarlet-fever. As before, so now, I have grouped the cases of, and deaths from, Membranous Croup with those defined as Diphtheria, and I am the more confirmed in thus grouping them by the fact that the number of deaths from so-called Membranous Croup are in excess of the cases notified as such. The terms Membranous Croup and Diphtheria are used by some without distinction, and for statistical purposes I regard the distinction as useless.

In the Urban Districts, 26 cases of Diphtheria and 6 of Membranous Croup are recorded as having been known of, and, in the Rural Districts, 91 cases of Diphtheria and 3 of Membranous Croup. There were thus 32 total cases in the Urban Districts with 16 deaths, and 94 cases in the Rural Districts with 25 deaths, or a total of 126 cases in the Administrative County with 41 deaths. In the year 1897, there were, in all, 105 cases of these diseases in the County with 30 deaths. There was thus a decided increase of cases and deaths in the year 1898 over those in 1897. The total mortality in 1898 gave a death-rate of 50·0 per cent. of the cases in the Urban Districts, of 26·6 per cent. in the Rural Districts, and of 32·5 per cent. in the Administrative County. These are high rates of mortality.

The Districts in which no cases of Diphtheria or Membranous Croup are recorded are the Boroughs of Brackley, Daventry, and Higham Ferrers, the Urban Districts of Desborough, Far Cotton, and Kingsthorpe, and the Rural Districts of Easton-on-the-Hill, Hardingstone, Middleton Cheney, and Towcester.

Dealing first with the Urban Districts, it appears that in the Urban District of St. James' (N'ton.), where there is no notification of infectious disease, "Only one case came under "notice, in Dallington Parish; this appeared to be due to "defective drains"; and two cases of Membranous Croup occurred at Finedon.

At Kettering, it is stated that "Only two cases of Diphtheria "have been reported, one of which ended fatally. It seemed "probable that the cause of the illness in this instance was the "keeping of a large number of fowls on some very sodden ground "at the back of the house where the illness occurred."

In the Oundle Urban District, "In March, three cases of "Diphtheria occurred in the Benefield Road, amongst children "in separate houses, and independent of one another. There "was very little rainfall previous to the outbreak, and the sewer "at that end of the town did not get flushed sufficiently; in "consequence of which sewer-gas found its way to the surface. "The matter was reported to the Council, whereupon it was "decided to erect a patent ventilating shaft at the head of the "sewer. This was done, and the result has been satisfactory. "The cases were mild in character, fortunately, and all recovered. "In May, a case of Membranous Croup occurred in a house "situated in 'Basset'. The drains here were found to be defective, "and were reported as so to the Council, with the result that "they were put in order."

At Raunds, three cases of Diphtheria, and at Rothwell and Rushden one case of Membranous Croup and Diphtheria were respectively brought to notice, while in the Wellingborough Urban District "There were 16 cases notified during the year, "and there were four deaths,—three were in children under five "years of age."

In respect of the Rural Districts, and dealing first with those in which there was no epidemic prevalence of the disease, it appears that in the Brackley District "There were three cases

" of Diphtheria occurring in the parish of Aynhoe, two of them " being of a very mild character." The third case—a child two years of age—proved fatal.

In the Crick District, "The single death from Diphtheria, a " somewhat doubtful case, occurred at Kilsby, and the other two " cases of the disease which were notified occurred at Lilbourne."

In the Daventry District, only "One case of Diphtheria of a " very mild type occurred in Braunston, and recovered;" so also in the Gretton District, "Only one case of this disease was " notified from Harringworth. It was of a very mild type, and " was not verified by Bacterioscopic Examination. There was " some delay in the notification, and no cause could be found for " the disease."

The Medical Officer of Health for the Kettering Rural District reports that "Two cases of Diphtheria were notified " from Cottingham, the first of which was imported from a " neighbouring village out of the district: both recovered. One " case occurred in Broughton. The condition of the premises " was enough to account for this case, which also recovered."

Two cases of Diphtheria and one of Membranous Croup were reported in the Oundle and Oxendon Rural Districts respectively, and, in the Potterspury Rural District, " Five cases of " Diphtheria were notified, all from Paulerspury, and apparently " in connection with the prevalence of Scarlet-fever in that village " at one time or another throughout the year."

The really extensive prevalences of the disease occurred in the Rural Districts of Brixworth, Northampton, Thrapston, and Wellingborough, and these are deserving of more notice.

The Medical Officer of Health for the Brixworth District reports that " At Guilsborough there has been an epidemic of " Diphtheria, which assumed such a serious character that it was " thought advisable to have the benefit of the opinion of the " County Medical Officer of Health. He made a careful and

" thorough inspection of the village and reported thereon fully. " He was of opinion that the spread of the disease was mainly " due to several causes, amongst which were the aggregation of " the children in school whilst some of them were suffering from " ill-defined sore-throats, and the faulty sanitary condition of the " village generally. He also considered the closet accommodation " faulty before the alterations, which briefly were the conversion " of Pail Closets into Flush Closets, cementing of Urinal, and " freer ventilation of the Closets. The present Brick Sewer he " condemned, and strongly recommended the re-sewering of the " village. The present Brick Culvert has been cut off from the " Highway drain, and a number of ventilation shafts have been added." A few other cases of Diphtheria at Creaton and Holdenby were traceable to the neighbouring village of Guilsborough, and, in respect of the former village, " The Creaton " National School closets were on inspection found to be " insanitary, and in consequence the School was closed for some " weeks; during the period of closure, the closets were " reconstructed on a thoroughly sanitary basis."

In respect of the Northampton Rural District, the Medical Officer of Health writes " With one exception, all the cases of " Diphtheria occurred at Harpole, or could be traced to this " village. It was the continuation of the epidemic that broke " out from the schools in the previous year, and lasted from " January on and off till the beginning of October, since which " time no other case has been reported, so I hope that the " epidemic is now at an end. The schools have been closed on " and off; and it was not till March that the new closets and " playground were finished. In that month, Mr. Paget, the " County Medical Officer of Health, kindly visited the village " with me, and, with a few minor alterations, approved of the " alterations in the sanitary arrangements, but considered the " schools most antiquated and insanitary. Plans for the enlarge- " ment of the school were shown to us, but they seemed not " altogether satisfactory, as they would interfere still more with " the limited ventilation of the schools. Nothing, however, has

" been yet done to carry out any plan of enlargement, and an " early return of the disease is not improbable unless some " improvement is effected. There were, unfortunately, two fatal " cases here, and the disease was only arrested in October by " issuing a hand-bill to every house, urging the tenant to carry " out certain sanitary measures, and to put his house and " premises in a satisfactory sanitary condition. One isolated " and fatal case of Diphtheria occurred at Bugbrooke, in a little " child, but I could not at all trace its origin, and no other person " caught the infection, though there were several children in " the same family."

In the Thrapston Rural District, " Diphtheria again " appeared in that part of Tichmarsh known as Slington, where " it appeared last year. Prompt measures of disinfection were " taken, and as there appeared to be suspicious cases of sore- " throat among school children, the school was closed for a short " time, the premises were disinfected, and alterations were made " in the spouting and drainage." Cases of Diphtheria were also seen in Ringstead.

The Medical Officer of Health for the Wellingborough Rural District says, " In May last I furnished a special report as to " the cause of the outbreak of Diphtheria at Earls Barton." From this report, it appeared that the outbreak was attributed to a deficient water supply, owing to the long period of dry weather, whereby the drains became blocked through want of flushing. Many of the cases were in houses where pan-closets, without means for flushing, otherwise than by hand, were in use.

Enteric Fever.—There was a much greater prevalence of Enteric Fever in some parts of the County during the year 1898 than in 1897. There were 238 known cases in 1898 as against 144 in 1897. There were 118 cases in the Urban Districts, and 120 in the Rural Districts. The localities in which serious outbreaks of the disease occurred were the Desborough, Kingsthorpe, and Rushden Urban Districts, the village of Corby

in the Kettering Rural District, and Weedon in the Daventry Rural District. The total number of deaths in the Urban Districts was 16, or 13·5 per cent. of the Urban cases, as against 12·1 per cent. in 1897; and in the Rural Districts there were 15 deaths, or 12·5 per cent. of the Rural cases, as against 24·4 per cent. in the year 1897.

There was only a single case in the Boroughs of Daventry and Higham Ferrers, and in respect of the latter this was an imported case from the adjoining district of Rushden. In the Far Cotton Urban District, too, there was only a single case of the disease, occurring in "a person just removed into the district." The single case which came to knowledge in the St. James' (N'ton.) Urban District was also due to outside influences, being that of a man "drinking impure water at Weedon, where he "worked." The single case in the Oundle Urban District "occurred in December. The disease, most probably imported, "was of a mild character, and did not spread."

Of the other Urban Districts, in which more than a single case of Enteric Fever occurred, the most important outbreak was in the Desborough District. According to the report of the Medical Officer of Health, "Typhoid Fever was again present in "the district during the year. In the autumn, the disease "assumed quite a serious epidemic character. A special report "was presented to the Council with reference to this outbreak, "and in that report the opinion was expressed that in the great "majority of the cases it was through the medium of the drink-"ing water that the disease was conveyed to those attacked. "Fortunately, the Council was able to provide the suspected "localities with water of recognised purity, and the adoption of "this course led doubtless to the prevention of the disease "attaining more serious proportions. The cases were notified as "follows:—In June, 1 case, August, 2 cases, September, 8 cases, "October, 17 cases, November, 4 cases, December, 1 case, or a "total of 33 cases with one death. The other of the two deaths, "registered in the year as due to Enteric Fever, was that of a

" patient attacked in the previous year. In order that the " sufferers from this epidemic might have sufficient nursing " during their illness a local Nursing Committee was formed, " and appeals were made for funds for that purpose. It is " gratifying to be able to state that the results were most satis- " factory. Nurses were obtained from Northampton and " Leicester, and it is in a great measure owing to their care of, " and attention to, the patients, that out of 33 cases only one " proved fatal."

In regard to the Finedon Urban District, " Three out of the " five cases of Typhoid Fever occurred in one house. The water " supply was bad, and notice to that effect was posted on the " pump. In the other two cases the sanitary arrangements were " bad, and were improved. There were no fatal cases."

In respect of the prevalence of the disease in the Kettering Urban District, the Medical Officer of Health reports as follows:— " Seventeen cases of Typhoid Fever have been notified, six of " which were removed to the Hospital. They occurred in the " following order:—

" January	... 1	July	... 1	November	... 1
" March	... 1	August	... 4	December	... 1
" April	... 1	September	... 5		
" May	.. 1	October	... 1		

" and in the following localities :—

" Princes Street (2)	Albion Road	Nelson Street
" Carlton Street	Fuller Street	Tresham Street
" London Road	Green Lane Terrace	Gas Street
" Regent Street	Ford Street	Thorngate Street (2)
" Alfred Street	Buccleuch Street	

" The Matron of the Hospital was unfortunate enough to " contract the disease from being in constant attendance upon a " particularly bad case.

" As will be seen the cases occurred at all times of the year " and in different parts of the town. Several of the cases were

" imported ones, some were traced to drinking impure water, and " some to faults in the drainage arrangements, while one appeared " to have contracted the illness from bathing in a brook contain- " ing sewage matter. Three cases proved fatal, all of which died " in the Hospital. In all cases the sewers in the locality received " extra flushing, and the private drains and closets were also " thoroughly cleansed."

The Medical Officer of Health for the Kingsthorpe Urban District says that, " In the Autumn there was a small outbreak " of Typhoid Fever in the Semilong District, being almost " restricted to two houses, the occupants of which had family " connections. I was unable to trace the origin of the infection, " but fortunately was able to prevent its spreading to other parts " of the District."

The eight cases of the disease in the Raunds Urban District have occasioned no special remark, nor the two cases in the Rothwell Urban District; but the occurrence of Enteric Fever in the Rushden Urban District affords another illustration, in addition to those of the Desborough and other districts, of the close association of impure drinking-water with the causation of the disease. As stated in the report of the Medical Officer of Health, " Out of twenty-two cases of Typhoid Fever there was " one death. The fever commenced in August and by September " there were thirteen cases. It was known that eight of the " above cases had their water supply from a surface well, the " pump of which was situated against the back premises of the " house occupied by Joseph Green, pork butcher, High Street, " and there is little doubt that the five other children who often " played in Green's yard and the slaughter-house, drank some of " this well water, which was at any time liable to contamination, " there being several nuisances in proximity to it. Three other " cases originated from the same source. In the case of Hooper, " the first case of Typhoid, who lived next door to Green's, it is " possible it might be attributed to the effluvia from the venti- " lating pipe in Green's yard which was connected with the sewer

" in West Street, for this sewer was infected with Typhoid " Excreta at the commencement of the year. Mr. Paget, the " County Medical Officer of Health, also investigated the above " cases and was of the same opinion as to the cause of the fever. " In October there was a case up the Bedford Road. In this " instance the probable cause was the contamination of the well " water, nine yards away from which was a tub placed in ground " into which the liquid contents of the piggeries ran ; this tub " was leaky and the contents had been overflowing, polluting the " soil around. This must have found its way into the well, the " water of which on examination I found bad. Two other cases " arose in November, these were attributed to drinking contami- " nated well water ; and two cases in December, in which the " town water was drunk,—the source of their origin could not be " traced."

In reference to the cases occurring in the Wellingborough Urban District, the report states that " There was a decrease in " the number of notifications during the year. Six cases occurred in " January and others spread through the year, and only one case " was fatal. The majority were known to be imported."

Dealing first with the Rural Districts in which there was no serious prevalence of Enteric Fever, the three cases in the Brackley District have occasioned no special remark ; and the cases in the Brixworth District " occurred in the village of Old, " two of which were traceable to causes outside the village : one " proved fatal. The third case was due to milk-infection from " one of the previous cases." A single case in the Crick District occurred at Barby and recovered, and the case in the Hardingstone District was at Wootton. The latter was at once removed into the Northampton Infirmary, and no other cases were reported. The Medical Officer of Health adds, " I could not trace the origin of " the disease—the cottage was somewhat dirty and overcrowded, " but the water supply proved to be good." Of the case in the Middleton Cheney District, the probability is said to be that it " was contracted during a visit from home," and much the same

reason is given for the occurrence of the case in the Potterspury District. In the Northampton District, "The seven cases of "Typhoid Fever occurred in two adjoining cottages, in the same "yard, at Lower Heyford, and, unfortunately, one of them was "fatal. There can be no doubt that they arose from drinking "impure water from a pump in the yard; this was proved to be "impure on analysis, and the pump has been chained up. "Fortunately, there is a good public supply of drinking water "near to these cottages." With respect to the cases in the Oxendon District, the Medical Officer of Health says, "The two "cases of Typhoid Fever occurred at Sulby Hall Gardens, with a "long interval between, and one proved fatal. Inspection of the "premises and surroundings were carefully carried out on both "occasions, and the origin of the first case probably depended "upon the opening up and alteration of the drainage about the "Hall. The water supply was examined into but found to be "satisfactory." Of the cases in the Thrapston District, one at Little Addington was notified at the commencement of the year and proved to be the last of the 1897 epidemic. In respect of another case, the Medical Officer of Health reports as follows :— "A case of Typhoid Fever was seen in August which attracted "some attention and was made the subject of careful investigation. "It appeared that a girl contracted Typhoid Fever at Leicester, "and was placed in a cab and driven to Tichmarsh, a distance of "over forty miles. To say the least it was certainly an act of "mistaken kindness on the part of her friends. The case rapidly "proved fatal." In the Towcester District "ten cases were reported "with a remarkably high mortality, for out of these ten reported "cases six were fatal. The first in April in Litchborough, and "the next in May at Adstone,—minor drainage defects were "found in the surroundings of both, as also in two cases "occurring in October at Blakesley. A case at Easton Neston "arrived there ill from Manchester. Of the five at Towcester, in "one case in Albert Row, no particular local defect could be "found. One case was imported. The other three had probably "a common origin in a foul cesspit privy, and contaminated soil

" around, with a well close at hand, the water of which is of " doubtful purity." There are no special remarks about the cases in the Wellingborough District.

The report of the Medical Officer of Health for the Kettering Rural District, with regard to the cases coming under his notice, is both interesting and instructive :—" A case of Typhoid Fever " occurred at Broughton in February, which was at once removed " to Hospital. It was caused by an overflowing ashpit and cess- " pool. No further case occurred, and the patient recovered. " Another case, caused by drinking impure water, was brought " from Broughton to the Hospital in December, and it is now " convalescent. Three cases of this disease occurred in Burton " Latimer. Impure drinking water was the cause in one instance, " and in another swallowing water while bathing in a brook con- " taining sewage matter. Two of these cases were removed. A " very sad case of Typhoid Fever occurred in Stanion in July, " when the young mother of a family was seized with a very " virulent form of the disease, and was carried off in a very short " time. Not only was the drinking water bad, but the drains " were in a very unsatisfactory state and quite untrapped. But " the most serious outbreak with which we have had to contend " in this district for some time occurred at Corby in September, " Owing to the obscure symptoms in the earlier cases, as many " as ten persons were suffering from the disease before your " Officers got to work to prevent the spread of the disease. All " these cases occurred in one batch of houses near the Brook, and " we came to the conclusion that they were caused by an untrapped " drain connecting a room in the cottage, where the first case fell, " with the Brook which had become very polluted owing to the " dry season; the drain itself, too, was very stagnant. The same " privies were used by the inhabitants of these houses, and for " the reception of the evacuations of those who were ill, and at " first no means were taken to disinfect or bury these. The " following measures were taken, without loss of time:—The " drain was cleansed and trapped; the brook was cleansed; a " nurse was despatched to the village, whose duty was to help in

" and direct the nursing of the sick, and to stringently carry out " the disinfection and burial of infected matter. Cases then be- " gan to fall outside the area of the batch of houses above " mentioned, and every one of these cases was removed at once " to the Infectious Diseases Hospital, so that no fresh centre " might be started. Shortly after, a case of Typhoid Fever " occurred at Cottingham. This man had been lodging at one of " the infected houses at Corby. He was removed to the Hospital " the next day. In all 26 cases suffered: all but two of these " had been connected in some way with the first batch of houses " named. One of these two had been drinking bad water, and " the other had been working at Desborough, where Typhoid " Fever was prevalent. Seven cases were removed to the Hospital; " two cases proved fatal,—one at Corby and one at the Hospital. " The measures taken to prevent the spread of the disease were " eminently successful. The first cases were notified on September " 15th, the last on November 6th. To prevent any further " pollution of the Brook it has been decided to make a semi- " culvert, so that without covering it a smooth and easily cleansed " surface will be provided. The only other cases of Typhoid " occurred at Warkton quite at the end of the year. Four cases " were notified—all in one house. At first, the drinking water " was suspected, but as several other families had been using the " same water it is more probable that the disease was caused by " an offensive drain, which had been opened in the street almost " close to the infected house. Every effort has been made to " prevent the spread of the illness: a nurse was employed as in " the cases at Corby, and, as far as I can judge, these efforts have " been successful, nearly a month having elapsed since the last " case fell."

The report of the Medical Officer of Health for the Daventry Rural District is hardly less instructive:—" Enteric Fever " appeared in 4 of the 27 parishes. A serious outbreak of 20 " cases occurred during August and September in Weedon. On " May 28th, a single case was notified, this recovered; but on " August 25th, I received four notifications of cases in two

" families. On visiting the place, I found there was possible " contamination from the May case of the well supplying some " 6 or 7 houses in Lower Weedon. I, therefore, had this well " closed at once, and, although it was certain that other cases " would occur, I believe the immediate closing of this well pre- " vented a still more serious spread of the disease. The 20 cases " were all notified before September 24th, distinctly pointing to " the origin of the disease; if an additional reason is needed, the " fact of a man from Road Weedon, who was working near the " well and drank the water, being the only person in Weedon " apart from these houses who fell with the disease will supply " it. This well belongs to the London and North Western " Railway Company, who had the water analysed and found it " polluted with sewage; the Company are now putting down a " trial boring with a view of obtaining a suitable supply of water " for their cottages. Of these 20 cases of Enteric Fever, only " one proved fatal, a result which is most satisfactory. The " remaining three Enteric cases occurred in Badby, Long Buckby, " and Whitton. The Long Buckby case was notified on March " 23rd, and died from Pneumonia early in May. The Badby and " Whitton cases were both mild, and recovered."

Puerperal Fever.—There were rather more cases of and deaths from Puerperal Fever than in the year 1897. In the Urban Districts there were eight reported cases with four deaths, and, in the Rural Districts, five cases with three deaths. At the same time, these figures do not represent any undue proportion of the accidents attending child birth.

Erysipelas.—Though the total number of known cases of Erysipelas was less than in the year 1897, the mortality rate from this disease was higher. There were 91 cases with four deaths in the Urban Districts, as against 98 cases and two deaths in the year 1897, and, in the Rural Districts, 77 cases with four deaths, as against 94 cases and four deaths. The percentage case mortality for the Urban Districts was thus 4·4, as against

2·04, and 5·2, as against 4·25, for the Rural Districts. The higher mortality may possibly be taken as an indication of greater care in the diagnosis of cases for the purpose of their notification, for, in spite of the increase of population, the total number of recorded cases was less by 24 than in the year 1897, while the total increase in deaths was only 2. I can only repeat what I said in my previous Annual Report, that very great care ought to be exercised in the diagnosis of either the traumatic or idiopathic forms of the disease for the purpose of notification.

Measles.—There was a very general prevalence of Measles throughout the County, and there were 78 deaths, as against only 3 in the year 1897.

The only Urban Districts in which there was no mortality from Measles were the Boroughs of Brackley and Higham Ferrers, and the Districts of Desborough, Oundle, and Raunds. In the remaining Urban Districts, it is reported that there were a few cases in the Borough of Daventry during April, and that the disease "continued to spread so rapidly, that in June it "became necessary to close the schools from the 9th to the 23rd." The epidemic in this Borough seemed to be over in July. Though Measles did not spread greatly in the Finedon District, the Medical Officer of Health took advantage of the occasion to sound a note of warning :—"Measles was introduced from Irthlingborough "in the last quarter of the year, but fortunately was not able to "obtain a foothold, and the few cases we had were isolated to the "best of our ability, and the children from the infected houses "kept from school. The great difficulty in preventing the spread "of Measles is the non-appreciation, or non-realization, by the "parents of the dangerous nature of the disease and its compli-"cations. 'Its only Measles' is the remark one often hears. It "may, therefore, be well to state here that Measles, with the "exception of whooping-cough, is responsible for more deaths "amongst children than any other disease, and it is especially "fatal between the ages of one and three years. If I could only "get people to believe that the best way of doing their duty

" towards their neighbour, in whose house there is a case of " infectious disease, even if it is 'only Measles,' is by keeping out " of it, we should have fewer cases and less trouble with those we " do have. It is a duty they owe to their children and to the " community generally, as well as their duty towards their " neighbour. One too often hears the remark 'I've had it in my " 'house, why shouldn't somebody else have it in theirs.'? " People who think thus are the greatest stumbling-blocks to the " progress of preventive medicine, and are always a source of " danger to the community they dwell in." In the St. James' (N'ton) District "there were 39 cases under notice," and of these 31 occurred in Dallington Parish. "The infant school was closed on account of the epidemic for six weeks." In the Kettering Urban District "Measles was somewhat prevalent in " the middle and latter part of the year, and no less than 18 " deaths were caused by this disease and its complications." The increase of Measles in Rushden District having "all the " appearance of becoming an epidemic," the Medical Officer of Health advised the closing and thorough cleansing and airing of the Schools. Although there were some cases in the Wellingborough District, the disease is reported as not having been very prevalent, and to have disappeared by the end of the year.

The Rural Districts in which there was no mortality from Measles were Brackley, Easton-on-the-Hill, Gretton (in spite of prevalence), Hardingstone, Middleton Cheney, Northampton, Oundle and Oxendon (in spite of local prevalences), and Potterspury. In the Brixworth District, an epidemic of Measles occurred at Scaldwell during December, and the Schools were closed. "Measles were also very prevalent in the village of " Maidwell, and a few cases occurred at Draughton during the " summer months ; no deaths occurred. The National Schools " in the former village were closed." In the Crick District, " The two deaths attributed to Measles occurred at Lilbourne, " where there was a sharp outbreak of the disease in mid- " summer necessitating the closing of the school." The Medical

Officer of Health for the Daventry District reports as follows :— "Measles not being included in the diseases notified, I am only "aware of cases where the epidemic was so great as to seriously "affect the attendance of children at school ; this unfortunately "occurred very often during the year. Eight Parishes were "affected in this way, and the schools were closed owing to the "disease in the following villages :—Long Buckby, from March "14th to April 16th ; West Haddon, from April 20th to May "14th ; Staverton, from May 18th to June 11th ; Newnham, "from June 21st to July 16th ; Norton, from June 21st to July "16th ; Weedon, from July 11th to July 30th ; Badby, from July "20th to August 8th ; and Welton, from October 6th to "November 14th. So large a percentage of children were ill "that the closing of the schools in all these villages was "considered the only means of stamping out the disease ; it "must, however, have been of a mild type as only three deaths "were registered from this cause, one each in Catesby, Hellidon, "and Staverton." In the Gretton District the disease was very prevalent, and the schools at Rockingham and Harringworth had to be closed. Measles was also very prevalent in the villages of Cottingham, Middleton, and Corby in the Kettering District, necessitating the closure of the schools in those places. In the Oundle District, the disease "was imported into Bulwick in May, "and subsequently spread to Blatherwick." At Polebrook also the disease appeared. In all these villages the schools had to be closed, and the Post Office likewise in the last named place. In the Oxendon District, "There was a very considerable out "break of Measles in the early summer and onwards pretty "generally throughout the District, beginning on the Eastward "and spreading from village to village towards the Westward. "The schools at Farndon and Sibbertoft were closed in "consequence." It is curious to note that both these last villages were similarly affected with the disease in the year 1897. Measles was also prevalent in the villages of Woodford and Addington in the Thrapston District, of Litchborough, Blakesley, and Greens Norton in the Towcester District necessitating the closure of the

schools in all three villages, and at Irthlingborough and Little Irchester where the schools were also closed.

Whooping Cough.—The number of deaths from whooping cough in the County was 40, as against 141 deaths in 1897. There was 26 deaths in the Urban Districts, and 14 in the Rural Districts. These figures represent a return to the normal conditions of this disease when not greatly epidemic in the County. In the years 1895 and 1896, the total number of deaths from whooping cough were 41 and 44 respectively. The Urban Districts which, during the year 1898, showed no mortality from the disease were the Borough of Brackley, and the Desborough, Finedon, Oundle, Raunds, and Rothwell Districts; while among the Rural Districts those of Brackley, Crick, Easton-on-the-Hill, Gretton, Hardingstone, Middleton Cheney, Northampton, Oxendon, Potterspury, and Thrapston, contributed no deaths. In the Borough of Higham Ferrers, however, "Whooping cough prevailed extensively for the first three "months," and in April and May it also was prevalent in the Borough of Daventry. It was likewise prevalent in January in the Rushden Urban District, "Nine deaths resulting from it;" but, though there were a few cases early in the year with one death in the Wellingborough Urban District, "there was no "epidemic." Comment is made in the report for the Daventry Rural District that "Whooping cough was prevalent in Stowe-"Nine-Churches during November and early December, and the "schools were closed owing to the disease from November 18th to "December 10th; one death only occurred;" and, in respect of the Towcester Rural District, that the disease "was very "prevalent in Pattishall and its surroundings in the late "autumn."

Diarrhœa.—So far as the prevalence of diarrhœa can be estimated by the mortality returns, it does not appear to have exceeded the average of the past few years. There was a total of 114 deaths from diarrhœa in the County, as against 131 in the year 1895, 66 in 1896, and 110 in 1897. As many as 102, or

Sketch Map of the Administrative County of Northampton.

Urban Districts—Numbered.
Rural Districts—Named.

1 Brackley - - Borough
2 Daventry ,,
3 Higham Ferrers ,,
4 Desborough - Urban District
5 Far Cotton ,, ,,
6 Finedon ,, ,,
7 St. James' (N'ton) ,, ,,
8 Kettering ,, ,,
9 Kingsthorpe ,, ,,
10 Oundle ,, ,,
11 Raunds ,, ,,
12 Rothwell ,, ,,
13 Rushden ,, ,,
14 Wellingborough ,, ,,



Infectious Disease (Notification) Act, 1889.

Districts in which Act was in operation in 1897, represented thus:—
,, ,, ,, ,, adopted in 1898, ,, ,,:—
,, ,, ,, has not yet been adopted, ,, ,,:—

90·0 per cent., of these deaths were of infants under five years of age, and I can only repeat what I said in my previous Annual Report that, in the summer months, the greatest care ought to be exercised by all responsible persons not to keep food for infants in dark, close, or damp places, or exposed to emanations from organic waste and polluted soil. In this connection, I again commend to the notice of all engaged in Local Government in this County the desirability for all the Districts, which have not yet done so, to adopt Part III. of the Public Health Acts Amendment Act, 1890, under the provisions of which the building of houses on ground which has been filled up with any matter impregnated with foecal, animal, or vegetable matter, until this shall have been removed or rendered innocuous, is prohibited.

It can hardly be too strongly impressed on all that infant mortality from diarrhœa is to a very large extent mortality from a preventable disease.

Infectious Diseases Notification.

In my last Annual Report I referred to the fact of there being six Districts within the Administrative County which had not adopted the Infectious Disease Notification Act. Of these Districts, four were Urban, and two were Rural. I am happy to be able to report now that the Oundle Urban District and the Rural Districts of Brixworth and Oxendon have since adopted the Act. The Districts which have declined to adopt the Act are the Borough of Brackley, with an estimated population of 2,700 persons, and the St. James' (Northampton) and Rushden Urban Districts, with estimated populations of 6,000 and 12,000 persons respectively. The united population of these Districts is, therefore, estimated at 20,700 persons, or 8·8 per cent. of the estimated population of the Administrative County.

I give herewith a sketch map showing (*a*) the Districts of the County in which the Notification Act was in operation in the year 1897, (*b*) the Districts in which the Act was adopted during 1898, and (*c*) the Districts in which the Act has not as yet been adopted.

The following are some of the advantages derived from the adoption of Infectious Disease Notification :—

1. The nature, locality, and amount of infectious disease is made known to the local authority and its officers ;
2. Precautions can thus be taken to prevent its spread ;
3. Insanitary dwellings acting as foci of disease and infection are more completely brought under notice, and their defects more resolutely ordered to be remedied ; and
4. The sanitary staff of a district, being kept in closer touch with the actual conditions of the whole population, are better able to give advice to prevent the introduction of infection into households.

It is also most important for the purposes of *inter-notification* that every District Medical Officer of Health should receive reliable information of the liability of infectious disease spreading from one district to another, and this can only be properly secured by every District in the County possessing the powers of disease notification.

These points have not been lost sight of in many of the districts of the County, and more than one reference to them is to be found in the Reports of the District Medical Officers of Health.

The Medical Officer of Health for the St. James' (N'ton.) Urban District reports as follows :—" It is much to be regretted " that the St. James' District has not yet adopted the Infectious " Disease (Notification) Act of 1889, in the absence of which, it " is impossible to determine with anything like precision the " prevalence or extent of infectious disease, and, what is worse " still, to nip it in the bud before it assumes epidemic proportions. " The health statistics of the County, too, are much impaired in " value by the inaccuracies that must necessarily occur where " the needful figures are not forthcoming. The expense of " notifying infectious disease must be a very small and

" insignificant addition to the sanitary burdens of a district, " whereas the resulting advantage to the Medical Officer of " Health in enabling him to grapple successfully with epidemics " in their initial stage is almost incalculable."

The Medical Officer of Health for the Kettering Urban District says:—"The Notification of Infectious Diseases continues " to be most useful, and has without doubt been the means in " many instances of preventing the spread of illness."

" I have continued the practice of communicating weekly to " the Local Government Board the cases of Infectious Disease " notified to me, and have received in return the number of cases " notified from other places. Mr. Paget, the Medical Officer of " the County Council, has carried out a similar plan with regard " to this County, receiving from each Medical Officer of Health a " monthly statement of infectious diseases notified in his district, " and in a few days returning a list of those notified in the whole " County. This is an excellent arrangement, and serves to put us " on our guard in every way. I have also had inter-communication " with Medical Officers of Health in several localities with regard " to suspected cases of infectious diseases arriving in or leaving " their districts."

The Medical Officers of Health for the Oundle and Raunds Urban Districts write respectively as follows :—

" During the year, the Council has adopted the ' Infectious " ' Disease Notification Act,' which is a step in the right direction, " but not complete without an Isolation Hospital, the need for " which, in my opinion, has never been so evident as during the " past year."

" I may mention that the Infectious Disease Notification " Act, which has been in force here for some years, is carried out " in every particular as far as can be done in a place where no " Isolation Hospital exists."

The Medical Officer of Health for the Brixworth Rural District reports that " The Infectious Disease Notification Act

" came into operation on August 1st, 1898 ;" and in reference to the outbreak of Enteric Fever at Weedon, the Medical Officer of Health for the Daventry Rural District says, " I may in passing " draw attention to the great value of the Infectious Disease " Notification Act in a case like this, where, by early notification, " immediate action is taken to prevent the further spread of the " disease, and hence many valuable lives are often saved."

The Medical Officer of Health for the Oxendon Rural District reports thus :—" It is a matter of great congratulation " that the outbreak of Scarlet Fever at Wilbarston brought up the " question of the adoption of the Notification of Diseases Act, " with the result that it was passed and ordered to come into " force early in 1899. The difficulties in the past of acquiring " information of the outbreak of Infectious Diseases have been " very great, and the number of cases have never hitherto been " able to be accurately situated—and in many cases considerable " delay has been experienced in obtaining early information of " the outbreak of a case, consequently a great risk was run of a " large epidemic arising."

I am very hopeful that the Infectious Diseases (Notification) Extension Bill, now before Parliament, may be passed, and so place all defaulting Districts under the Notification Act which they have hitherto evaded.

Isolation Hospitals and Disinfection.

The subject of the available hospital accommodation for infectious diseases in the County is one which is now being inquired into; but it may be said at this time that, whatever the quality or extent of that accommodation, there is some available, either in the actual possession of a hospital or by arrangement with one, in seven of the Urban Districts out of a total of fourteen and in six of the Rural Districts out of a total of sixteen. It cannot be said that this is a sufficient amount of available means for either checking the growth of epidemics throughout the County, or for the special isolation of cases or their treatment. More than one of the District Medical Officers

of Health have called attention to the want of this accommodation in their Districts, and the matter is obviously one which calls for early attention and careful consideration. I am not at present prepared to say whether the establishment of "hospital districts," under the Isolation Hospitals Act of 1893, is desirable or not; but it is clear that in several of the Rural Districts a hospital in each District would be a great boon to the several communities, and possibly in one or two a "Joint Hospital" on the plan of the one at Kettering, which serves the Urban and Rural Districts bearing that name, would be a distinct advantage. The remarks of several of the Medical Officers of Health, particularly of Rural Districts, of the benefit they have experienced from the existence of hospital accommodation or of their desire to have such provided, are especially worthy of note, though the opinion of the Medical Officer of Health for the Potterspury Rural District is as yet not in favour of one for his District.

Reference has already been made, under the heading of "Scarlet Fever," to difficulties in the Borough of Daventry as to the utilisation of the hospital in that place; but, apart from this unfortunate state of affairs, it is said that "The water-supply "at the Sanatorium requires attention, as no water can be "pumped from the well, but has to be fetched or sent from the "Town."

Making Small Pox the ground of his appeal, the Medical Officer of Health for the Finedon Urban District writes :—"The "three great means of combatting this loathsome disease are "(1) Vaccination, (2) Improved Sanitation, and (3) Isolation. "As far as I can make out, Finedon people will have nothing to "do with the first of these three. They argue that improved "Sanitation is the only means of preventing small-pox, and "Isolation the only means of preventing the spread in case of an "outbreak. You are improving the Sanitation, and I ask you "to give me an Isolation Hospital for the town, so that we may "be ready."

The report from the St James' (N'ton.) Urban District is that "There is no Isolation Hospital, but an arrangement has "been entered into with the Borough Hospital of the Northampton "Corporation at Kingsthorpe (2½ miles), 100 beds, by paying "£2 2s. weekly each patient. There is no disinfecting apparatus, "and one is required for the District."

The utility of the Hospital at Kettering is clearly manifested in the following reports from the Urban and Rural Districts respectively:—"The Joint Isolation Hospitals of the Urban "and Rural Councils have been most useful to both districts. "During the earlier months of the year, by judiciously "removing suitable cases of Scarlet Fever the disease was "certainly kept in check, but during the latter months this "disease outran the accommodation which could be devoted "to it, and some cases were unable to be accommodated. "A few beds were, however, always kept in case of any specially "urgent cases falling. The Hospital has been occupied, often "very fully, during the whole year."

"Free use has been made of the Joint Isolation Hospital, "and I think the result has been more markedly beneficial in "the Rural than in the Urban District; indeed, in every instance "the use of it by persons from the Rural District seems to have "been the means of greatly assisting in arresting the spread of "disease, while the patients from crowded houses have had a "much better chance of recovery."

The Medical Officer of Health for the Kingsthorpe Urban District, in speaking of improvements in that District, refers to "the completion of the new infectious hospital, which has been "built to the most recent model plan of the Local Government "Board. It will provide accommodation for twelve patients, in "four wards placed in two separate blocks. It is also fitted up "with a patent steam disinfecting apparatus for thoroughly "disinfecting bedding and clothing. The building is now being "fitted up with suitable furniture, and in a very short time will "be ready for the reception of patients. I anticipate that this

" hospital will be a great boon to many of the inhabitants of " the District; and not only help to prevent the spread of " epidemics, but will be of the greatest service to those who have " the misfortune to have cases of infectious disease occurring in " houses where there are large families and consequently no " means of isolating the patients at home, but also in business " houses, where it is impossible to carry on the business without " great risk to the rest of the community, and the closing of " which would entail serious loss."

Besides pointing, in connection with the notification of infectious disease, to the need of an Isolation Hospital in the Oundle Urban District, the Medical Officer of Health also says that " At present there is no apparatus in the town for properly " carrying out the disinfection of infected clothing, bedding, &c."

In the Wellingborough Urban District, as at Kettering, " The Isolation Hospital was used as much as possible, and has " been very useful in many cases."

As in the Oundle Urban District, so in the Brackley Rural District, the Medical Officer of Health urges, in connection with the Infectious Disease Notification Act, that " the greater part of " the benefit from the adoption of the Act is still wanting on " account of the absence of a hospital for the isolation of the " cases;" while the Medical Officer of Health for the Brixworth Rural District, referring to the epidemic of Scarlet Fever in the village of Spratton, says " Epidemics of this nature bring " forcibly before us the necessity of a District Isolation Hospital, " which I am sure would ultimately prove of the greatest " benefit." The latter also states that " Formalin Gas has been " adopted as a Disinfectant instead of Sulphur," but the length of time during which it has been in use in his District does not allow of his reporting further on its efficacy as a germicide.

The curious example of an unfurnished hospital is found in the Gretton Rural District, and the Medical Officer of Health is definite in his advice thereon :—" As you own a share in the

Iron Hospital erected at Uppingham, you should approach the "Uppingham and Hallaton Councils, to get it furnished and "properly equipped. At present the hospital is useless. When "it is once fitted up and arrangements made for nursing and "Medical attendance, an effort can be made to stamp out Scarlet "Fever from the village of Gretton. If you cannot get the "Uppingham Hospital fitted up, you might approach the "Stamford, or some other adjoining Authority to take in your "cases. Your district is so small that you cannot well afford to "purchase a disinfecting apparatus, so I advise that you ask the "Uppingham and Hallaton Councils to join you in the purchase "of a portable apparatus for use throughout the Union."

According to the Report, the hospital in the Hardingstone Rural District appears to have served its purpose with efficiency :— "Out of the 22 cases of scarlet-fever, 15 were treated at the "Hardingstone Isolation Hospital, and of these all recovered. "The fatal case at Collingtree was treated at its own home. On "January 1st, 1898, 16 cases remained in the Hospital, and the "last of these was discharged on February 25th. The Hospital "then remained empty till July 15th, when scarlet-fever first "appeared in the village of Hardingstone, and in November the "Wootton cases commenced, so that since July it has been "regularly occupied, and on December 31st ten cases still re-"mained there. Besides these cases from our own District, "three patients have been received from Far Cotton District, "one from St. James' End District, one from a Technical School "at Dallington under the County Council, and one from the "town itself, as there was no accommodation at the Borough "Hospital. I am glad to say that, as a rule, there is now little "objection raised to the patients being removed into Hospital, "on the contrary, most parents think it a great boon to be able "to isolate the cases at once, and thus help to check the disease. "At the same time, I must point out that there is at present no "means of checking small-pox, should this disease unfortunately "appear. The present Hospital could not be used for this "purpose, and though in this District there are not so many un-

" vaccinated cases as in many other Districts, there are still " sufficient to make one anxious as to the consequences should " such an epidemic arise."

Referring to the cases of Zymotic disease which occurred in the Northampton Rural District, the Medical Officer of Health sounds a proper note of warning:—" Excepting one case of " Scarlet Fever, which occurred in a school in the Duston " District, all these cases have been treated at their own homes, " which is not quite satisfactory. In all cases, it should be the " rule to remove first cases, if the parents will consent to a " hospital, so that the outbreak may be nipped in the bud. Your " Council are under an agreement with the Hardingstone Rural " Council to receive your patients on payment of 25/- per head " per week; and if £100 a year were spent in this way, it would " be far more economical than providing, equipping, and carrying " on your own Isolation Hospital. At the same time, I must " point out to this Council that there is at present no means of " isolating small-pox cases; and noting the sudden increase of " people with consciences, and the liberal manner in which " exemptions from vaccination have been granted, I fear that " some day there will be urgent need for the isolation of these " cases."

Again, the Medical Officer of Health for the Oxendon Rural District, writing in a similar strain, says, " There is no " Isolation Hospital or available means of isolation in the " District, and in cases of Infectious Disease arising in cottages " with scanty accommodation great difficulty necessarily arises " in the efficient isolation of the cases. It will be a very great " advantage to the District if in the near future some arrange- " ment can be made to have the use of an Isolation Hospital, " either separate for the District or one combined with the " surrounding Districts. In the event of Small Pox breaking " out the matter might prove a very serious one, especially with " the large number of unvaccinated persons now resident. " Probably the most practicable scheme would be a conjoint

" Hospital for the Market Harborough Urban and Rural " Districts, and the Oxendon Rural District."

Lastly, the Medical Officer of Health for the Thrapston Rural District writes, " At your request, I procured information " respecting a suitable Disinfecting Apparatus, but the project " did not meet with adequate support. The question of " providing an Isolation Hospital has become more important as " there is practically no vaccination."

Vaccination.

Following on these reports, which refer so pointedly to the probabilities of Small Pox prevalence in different parts of the County, it is but in the proper course of things to examine the grounds on which such prevalence is anticipated.

The Medical Officer of Health for the Borough of Higham Ferrers writes thus :—" Vaccination still continues to be very " unpopular in this locality, and in most cases exemptions have " been obtained from the compulsory clauses of the new Act, in " spite of the facilities now afforded for the general use of " carefully prepared calf lymph. In view of this, and remember- " ing that for the last eight years Vaccination has practically been " abandoned in this district, it is impossible to contemplate the " appearance of small-pox amongst us without alarm, and should " the disease at any time reach epidemic proportions the " consequences could hardly fail to be most disastrous, not only " as regards loss of life, which would probably be considerable, " but from the great cost it would entail, and the serious effect " it would have upon the local trade. That vaccination affords " protection from small-pox and is practically a harmless " operation, the plainest facts allow us no room to doubt, therefore " it is to be regretted that the Legislature has failed to provide " for its general adoption. In these circumstances, it becomes " the duty of all who have the care of the public health to do " everything in their power to educate the popular mind to a just

" appreciation of the value of this, the only means we possess, " of protecting ourselves from a fatal and loathsome disease."

From the St. James' (N'ton) Urban District, the report is that "The Vaccination Acts are still in abeyance in this " district"; it has already been seen that they are so likewise in the Finedon Urban District, and neglected in others. In the Wellingborough Rural District, it is said that " Vaccination has " been entirely neglected," and nothing has transpired to alter the reports received from other districts referred to in my report for the year 1897.

During the year 1898, a means has been supplied by the Legislature, in the nature of a tremendous experiment, for ascertaining, in at any rate a rough way, the extent to which compulsory vaccination in England and Wales is unpopular. The procedure by which this has been rendered possible is provided for in Sec. 2 of the Vaccination Act, 1898. This Section of the Act reads as follows :—" (1) No parent or other " person shall be liable to any penalty under section twenty-nine " or section thirty-one of the Vaccination Act of 1867, if within " four months from the birth of the child he satisfies two justices, " or a stipendiary or metropolitan police magistrate, in petty " sessions, that he conscientiously believes that vaccination " would be prejudicial to the health of the child, and within " seven days thereafter delivers to the vaccination officer for the " district a certificate by such justices or magistrate of such " conscientious objection. (2) This section shall come into " operation on the passing of this Act, but in its application to " a child born before the passing of this Act there shall be " substituted for the period of four months from the birth of the " child the period of four months from the passing of this Act."

Now, in respect of the Petty Sessional Divisions of the County, the number of certificates granted under the second portion of this Section of the new Vaccination Act were as follows :—

Division.	No. of Certificates.
Brackley	364
Daventry	192
Kettering	4,115
Northampton	2,814
Little Bowden	262
Oundle	14
Thrapston	1,124
Towcester	570
Wellingborough	6,254
Stamford (Sub.)	Nil.
Stony Stratford (Sub.)	37
Total ...	15,746

The experiment, therefore, so far as the Administrative County of Northampton is concerned is sufficiently startling, and apparently fully justifies the serious forebodings of so many of the District Medical Officers of Health in the County. I cannot but share in their fears, all the more because vaccination in the populous County Borough of Northampton, between which and the several parts of the Administrative County the facilities for inter-communication are so numerous, is entirely at a discount, and as many as 10,296 exemption certificates were likewise granted to its inhabitants.

I trust that these fears may not be verified, and that the other provisions of the Act may be found sufficient to counteract the danger of loose declarations of conscientious objection to the greatest known preventive of a specific and loathsome disease. We shall perhaps find year by year that domiciliary vaccination, and the provision of a better and purer kind of lymph, will overcome both real and fancied objections, and, if this be the outcome of the Act, great and portentous as is the trial which is now being made, the saving of suffering and expense will be immense.

In the meantime, it will be necessary for careful enquiry to be made in this and succeeding years as to the extent to which vaccination is performed in every district, so that at least a fair

basis may be arrived at for estimating the extent to which any district is prepared to cope with the calamity of a small-pox epidemic.

Water Supply.

Very considerable attention has been given to the subject of the water supply of the several districts of the County in the reports of the District Medical Officers of Health, and indeed, in regard to the general public health of a community, there are no matters of greater importance than the provision and the maintenance of a wholesome and abundant supply of drinking water.

In the Borough of Brackley, it is said that "The water "supply has been abundant and of good quality; the level of the "water in the well has been maintained in spite of a considerable "shortage in rainfall. The large reservoir has been emptied "and cleaned out."

The Medical Officer of Health for the Borough of Daventry, however, says "I regret to say your efforts to find an abundant "and satisfactory supply of water for the Town have so far "failed. I can only add, as the need is as great now as in the "past, I hope your endeavours may soon be crowned with "success."

The need for an improved water supply in the Borough of Higham Ferrers is evidently associated with other sanitary requirements, for, in speaking of the necessity for efficient excrement disposal and scavenging, the Medical Officer of Health adds, "It is only by such means, and the prompt removal of all "house refuse, that we can hope to preserve the local wells, upon "which we have entirely to depend for water, from serious con-"tamination. And I cannot but think that the increased attention "that has already been given to this branch of our sanitary "work has had a good effect in this direction, for certainly the "water from the town pump is decidedly better in quality now "than it was a year ago. But each year the need for a plentiful "supply of good water becomes more urgent, and I trust the

" proposed Nene Valley Waterworks Company, which the " Authority has agreed to join, may soon be able to provide this. " And this is the more desirable, as it is probable that the un- " avoidable delay that has already occurred in the solution of " the difficult question of a public water supply may have been " a hindrance to building enterprise, and so helped to retard the " natural expansion of the town which, from a sanitary point of " view, is of considerable importance, as further house accom- " modation is badly required." In this connection, it may be noted that the Bill of the Nene Valley Waterworks Company has succumbed to the opposition offered it in the House of Lords, and the Council of the Borough of Higham Ferrers are again thrown on their own resources for finding a public supply of water other than what is obtainable from shallow wells.

It is satisfactory to learn, in respect of the Desborough Urban District, that " the construction of water-works for the " supply of the district has been commenced, and it is expected " that in the course of the next few months the work will be " completed ;" and that though " there are some wells still in use " in Far Cotton," there has been no complaint of their waters.

The Medical Officer of Health for the Finedon Urban District, in addition to recording the condemnation of three wells, says, " I hope, Gentlemen, that before the close of another year " we shall have made some visible progress towards obtaining a " good water supply. The majority of our wells are more or " less liable to contamination, and our present means of supply " must always be a source of anxiety to those who have the care " of the public health." Unfortunately, the progress in this matter which is referred to was dependent on the passage of the Nene Valley Waterworks Bill, and Finedon is again in the position that the Borough of Higham Ferrers is in respect of the search for a suitable public water supply.

In the St. James' (N'ton) Urban District, " The water " supply, which is ample and good, is from the Northampton " Corporation Waterworks, and is conducted by pipes from

"Tecton Reservoir, a distance of 9 to 10 miles;" and, in the Kettering Urban District, "The water supply has been ample "and excellent throughout the year, and a plentiful reserve has "always been present in the reservoir. The Waterworks are at "the present time being transferred from the shareholders to the "Urban District Council." It also appears, from the Sanitary Inspector's report, that seventy-five samples of water were taken for analysis in Kettering, resulting in 39 houses being supplied with the Company's water, wells being cleansed, and two new wells being made.

According to the report from the Oundle Urban District, it appears that "During the year seven samples of water have "been found, upon analysis, to be unfit for use. These have "been reported to the Council, and, in each case, a supply from "the town water system has been substituted. The town water "has been submitted to analysis during the year, and has been "reported as satisfactory."

The following is the report on the same subject from the Medical Officer of Health for the Raunds Urban District:—"In "February, at the instance of the Local Government Board, I "made a special report upon the water supply of Raunds, for "which purpose I personally examined the water and sur-"roundings of 96 wells and pumps, proving that the town is "well supplied with water and of very good quality in many "instances. At the same time, there is scarcely a well or pump "in the town which can be safely said to be free from contami-"nation from surface water from time to time, more especially "after heavy rains, and this has been proven to be the case in "past years where wells have had to be temporarily condemned "and sealed up, sometimes in one part of Raunds and sometimes "in another, and in some instances serious outbreaks of fever "have been traced directly to certain wells when it was too late "to avert an epidemic. All this, however, we soon hope to see "rectified, when the fresh water supply which has very properly "been advocated or ordered by the Local Government Board

" comes into operation, so that during the year all we could do
" was to see that all wells have been kept particularly clean, and
" as free from pollution or contamination as possible, and that as
" I mentioned before, all water for domestic purposes be boiled
" before using. These precautions are being well carried out by
" the people, and I hope that the negotiations concerning the
" new supply may soon come to a successful conclusion, so that
" this great danger to the Public Health, which has lasted so
" long, may be entirely done away with."

In Rushden, too, the need of improving the water supply of the town is most evident from the report of its Medical Officer of Health:—" The various schemes for procuring a more efficient " supply of water have failed; this leaves us with a smaller " quantity per head than we had last year, when it was only 8 " gallons per head, whereas the minimum quantity should be 16. " Taking into consideration the number of houses that had a " direct supply to the water closets, and that 200 new houses " have been built this year, a serious state of things might result " as the sewers would not be properly flushed. Therefore it " becomes necessary that another source of supply should be " procured, and this should be proceeded with at once, as it will " take a year or two to get a large scheme into working order." In this same district, it also appears that nineteen samples of well-water were examined, eleven of which were found to be bad, and notices to that effect were placed on the pumps from which they were drawn.

With regard to the water supplies in the Rural Districts, it appears that in the Brackley District they are " derived mainly " from shallow wells, and towards the late autumn many of " these became deficient owing to the great and continued " drought; but the tables of sickness and mortality do not " appear to show that the health of the district suffered " materially on this account, which never reached a serious " stage." It further is stated that " Plans were prepared for " the improvement of the public well at Helmdon, but the " matter has been again adjourned."

The water supply to an Inn in the village of Brixworth "on analysis, showed evidence of contamination by sewage "matter, in consequence of which the well has been closed;" and, according to the report for the Daventry Rural District, only "Slow progress is being made with the Long Buckby water "supply. The well for supplying the village with water under "the plans of Messrs. Usill, Brown, and Usill, was begun on "July 4th, and water was found about October 12th at some 250 "feet below the surface. Unfortunately, towards the end of the "year, a mishap occurred with the machinery which has caused "some delay."

In the Easton-on-the-Hill District, "The water supply of "the Easton portion of the district is excellent, being conducted "to the greater portion of the village by stand-pipes from a very "pure source." The Medical Officer of Health very properly adds, that "Dip-wells are a constant source of danger, and "should not be allowed. The surface of the ground round wells "should be protected from surface pollution by a layer of cement "extending over an area in proportion to the depth of the well."

Again, a like warning comes from the Gretton District. "The water supply throughout your district is largely derived "from 'Dip' wells, and, from position and structure of the "majority of the wells, very liable to pollution." The Medical Officer of Health adds, "I examined samples from the public "wells at Gretton and found them contaminated. Acting upon "my advice you have made a most desirable improvement at "the West Well at Gretton, and considerably lessened the risk "of pollution."

The report of the Medical Officer of Health for the Hardingstone District is as follows:—"The new water supply at "Hardingstone (worked only by wind power) has stood the test "of the last dry summer very well, and there has been an "abundant supply of good water for all the village. Eight "stand-pipes are in use in various parts of the village, with one "in the school yard, and the supply is laid on in most of the

"larger houses, so that every one has now a good supply of "wholesome water within reasonable distance." "Whilst the "lower part of the village of Denton is well supplied with water, "some of the cottages in the upper are very badly supplied. A "new well is about to be sunk by the District Council, and "probably, if good water is found, a similar scheme to the "Hardingstone one will be here adopted. There have been "nnmerous complaints also about the water supply at Wootton, "and this matter may soon have to be brought before the notice "of your Council."

In the Kettering Rural District, "Considering the very dry "summer the water supplies of the villages have held out well, "although in two or three places some inconvenience has been "experienced. Nothing has yet been done as to the improve- "ment suggested on this head at Pytchley, although Mr. Paget "has been at great pains to modify and make feasible the plans "which had been drawn out. It appears from his Report that "the scheme he suggests, which would not be a very expensive "one, will have to be carried out by private enterprise."

In the Middleton Cheney District, "The water supply from "pumps, springs, and draw-wells has, considering the long- "continued dronght, held out fairly well. The necessary work to "supply the cottages at Upper Boddington has been successfully "carried out."

The report of the Medical Officer of Health for the Northampton Rural District is as follows:—"I am pleased to "report that the works for the supply of water to Kislingbury "have been finished during the year and publicly opened. "Though there was some opposition to the scheme at first, I "believe the inhabitants now esteem it a great boon, and requests "have been made for permission to lay it on to certain houses, "which your Council have granted on very moderate terms."

With regard to certain villages in the Onndle Rural District, it appears that, in Kingscliffe, "The greater part of the

" houses on the top side of Park Street are practically without " water for drinking purposes," that " samples of water taken " from 20 public and private wells were submitted to analysis, " and of these 13 were utterly condemned," but that " happily " there is an ample supply of good water just outside the village, " which could be laid on without great expense." The Public " supply at Nassington being found impure, " several private " wells were sunk in consequence." Furthermore, the question of the water supply of Lutton came under notice, and here improved storage of rain-water is suggested, since " Situated as it is on the " high clay land, like many of the Huntingdonshire villages, it " is almost impossible to find a good spring."

In regard to the Oxendon District, the Medical Officer of Health reports thus:—"During the year the question of the Public " Water Supply was especially looked into, and those known " to have previously been defective kept watch over. Taking " the supplies as a whole they are very good in their capacity, " and with a few exceptions good in their quality; but in some " instances they are liable to contamination as the wells are " shallow, and often situated too near possible sources of " infiltration. The public wells at Wilbarston and Clipston have " been especially in fault. In the case of the former the level " of the water supply is in too direct connection with surface water " emanating from the neighbouring houses and pigsties, and " some radical alteration to protect it will have to be made. The " Clipston water too is apt to be contaminated by infiltration of " surface drainage. The chief danger to these public well " supplies generally would appear to be the proximity of pigsties, " and it is very necessary that they should be kept strictly " without the area of the well sources. Proper screening and " cleansing of the wells should be strictly adhered to. I am " glad to report that the former trouble in the water supply at " Stoke Albany appears to be remedied, and that there is now " a greater and more abundant supply to the reservoir than has " been the case for a considerable time past. Several samples of " water have been afforded for examination, and in all instances

" where it has been found to be defective the proper remedies " have been adopted to rectify the state, and a continuance " of the observations will be carried out."

During the summer, I made an inspection of the water supplies of the villages of Potterspury and Paulerspury, and could only confirm the opinion, previously expressed, of the Medical Officer of Health for the Potterspury Rural District that parts of those villages were in need of a proper public water supply. A copy of my report was forwarded to the District Council.

The question of a public water supply to the town of Thrapston is said to have been under consideration for some time, and it is to be hoped that it will be advanced without delay. In respect of the village of Little Addington in the Thrapston Rural District, it appears that " The Parish well which was " under suspicion was properly secured from surface pollution," and that " An important improvement has been made in the " water supply of Woodford." It is further stated, in reference to this last, that " The water coming from the high ground above " the place has been intercepted and brought into the centre of " the village. Further improvements are under consideration. " There appears to be an ample supply of water in the " neighbourhood."

The Medical Officer of Health for the Towcester Rural District reports thus :—" No more important work than the " provision of pure water can be undertaken by Sanitary " Authorities. I am glad to record that this work steadily " progresses in your district. Abthorpe is having its supply " extended through the village. Steps have been taken to " supply Pattishall, with its hamlets of Eastcote and Astcote, " from a common source. The public supply of Grimscote, " Blakesley, and Gayton is under your consideration, some of " the well waters of these villages having been condemned on " analysis. Altogether one may record that steady progress is " being made in this respect. The water supply of Towcester,

" good as it is in quality, has been inadequate in quantity during " the past two or three Autumns, and the question of obtaining " a further supply is under consideration. It must be " remembered that water has been short in many places owing " to the deficient rainfall, and it may be found that an " economy in the distribution of the water during periods of " scarcity might prove sufficient."

The report from the Wellingborough Rural District is as follows :—" The water supply at Earls Barton has been very " inefficient owing to the drought of the past year. Since the " late rains the supply has been more satisfactory. I would " suggest the present well being sunk some 200 feet deeper, when " in all probability a sufficient supply may be obtained. The " Wilby water supply still engages the attention of the Parish " Council. The sooner this and the drainage is attended to the " better it will be for the inhabitants. Several samples of water " have been examined, some were condemned as unfit for use, " others have been found good."

Dwelling-Houses and Overcrowding.

The reports of the District Medical Officers of Health contain more detailed references to the subjects of artisan dwellings and their overcrowding than in the previous year, and it cannot be doubted that these are matters which call for continuous attention in respect of the maintenance of good local health conditions.

Thus, the Medical Officer of Health for the Borough of Brackley writes, " I should be glad to see some action taken with " regard to many of the poorest cottages in various parts of the " town, which are really not fit for human habitation."

As already recorded under the heading of " Scarlet Fever," attention was called to certain overcrowdings in the Borough of Daventry.

The like question has called forth the following remarks from the Medical Officer of Health for the Borough of Higham Ferrers :—" Many of the existing cottages are very old and, in " consequence, ill constructed and inadequate, as far as cubic " space is concerned, to the health requirements of the families " that have been obliged to occupy them. A good supply of fresh " air and light in our dwelling-houses are among the first con- " ditions of health, and in proportion as we provide ourselves " with these may we hope to escape sickness ; and *especially* " shall we be enabled to resist the infection of phthisis and " other tubercular diseases, which find their natural home in " houses that are badly ventilated, sunless, and damp."

The Medical Officer of Health for the Desborough Urban District reports as follows :—" Instances of overcrowding, not " however of a gross character, have cropped up occasionally, " but these cases have usually been satisfactorily adjusted by " the judicious tact of your Inspector. Several blocks of " cottages have been erected during the year, and these have " been quickly occupied. With more housing accommodation in " the district, it is to be hoped that all tendency to overcrowding " will be removed."

In the Far Cotton Urban District, " One case of overcrowding " came under notice, which was in connection with a case of " Scarlet Fever ; it was at once rectified ; " while, in the Finedon Urban District, five cases of overcrowding appear to have been enquired into and abated.

Speaking of the dwellings of the working classes in the St. James' (N'ton.) Urban District, the Medical Officer of Health says that " These are as a rule in good condition. There are no " back-to-back houses."

In the Oundle Urban District, it appears that three cases of overcrowding came under notice, in two of which it was found necessary to take action.

The Medical Officer of Health for the Raunds Urban District says, "I think that during the past few years there has "been a great improvement in the general state of the houses "and their surroundings as regards cleanliness and sanitary "conditions," and, for the Rothwell Urban District, "With one "exception we have met with no serious instance of over-"crowding, but the occupants of the house referred to, we are "glad to say, are quite prepared to move as soon as they can "get a house."

In the Rushden Urban District, five cases of overcrowding were dealt with, and it is recorded that 200 new houses were built during the year.

With regard to the Rural Districts, it appears that "one "house was condemned as unfit for habitation" in the Easton-on-the-Hill District, and a single house in each of the villages of Cottingham and Corby in the Kettering District.

The following is the report of the Medical Officer of Health for the Hardingstone District:—"Twelve new cottages have been "built during the year—two at Castle Ashby, three at Cooknoe, "two at Brafield, two at Milton, and one each at Piddington, "Hackleton, and Collingtree. On the other hand, steps have "had to be taken regarding the following cottages. Three at "Rothersthorpe have been condemned as unfit for habitation and "have been shut up. Eight at Milton and one at Brafield have "been similarly condemned and will probably be pulled down. "One at Hardingstone has been also condemned, but has been "repaired and is again occupied. Three at Yardley Hastings "have been condemned, and of these one has been closed, one "repaired, and the other at present remains in abeyance. "During the year I made a report on the ventilation and "crowded surroundings of Yardley Hastings schools; at present "nothing has been done to rectify these matters."

One case of overcrowding came under notice, and was dealt with, in the Middleton Cheney District; and three cases at

Harpole and one at Duston in the Northampton District were likewise satisfactorily abated, "though not without some "trouble in two cases."

In the Oundle District, at Warmington, "An inspection was "made of some insanitary cottages, one of which was closed, "and alterations effected in the others." Another insanitary dwelling at Southwick was altered, in which was a case of Tubercular disease, but the Medical Officer of Health questions "whether anything will make it a sanitary dwelling." He also reports thus of a dwelling at Ashton:—"Cases of Diphtheria "and Erysipelas were seen last April in a house at Ashton, "which had a bad record for infectious disease, cases of "Membranous Croup and Septic Sore Throat having been "noticed in previous years. The premises were thorougly "examined and reported upon, and extensive alterations in the "closet arrangements made. The house now seems healthy."

In the Potterspury District a few cases of overcrowding are recorded as having come under notice, while two cases of overcrowding and one of a tenement unfit for habitation in the Oxendon District were enquired into and dealt with. Three cases of overcrowding and insanitary houses received attention in the Towcester District, and in the Wellingborough District several similar cases were remedied "without resorting to extreme "measures."

Excrement and Refuse Disposal.

In respect of the work of scavenging in the Borough of Higham Ferrers, the Medical Officer of Health reports thus:—
"By the more extended use year by year of the pail system, "which has now almost entirely taken the place of the "objectionable cess-pits, the work of scavenging has become a "most important one, and although, as far as I know, it has "been well carried out during the past year, I would urge upon "the Authority the need of constant vigilance, and on the part "of the public ready co-operation, in order that this important

" work may be maintained in the highest state of efficiency." There can be no doubt that in any populous district, unless there be excellent scavenging arrangements, the pail system will be found an unworkable one.

In the Desborough Urban District, another system of excrement disposal is pointedly referred to, in the report of its Medical Officer of Health:—" From your Inspector's report, I " find that several nuisances have been abated, and improvements " effected, such as the re-draining of cottages, the proper " trapping of drains, the abolition of privies, and last, but not " least, the removal of all piggeries from within 40 feet of " dwelling houses. It has often been observed that hand-flushed " water closets constitute serious nuisances. With the advent " of the water works, I would recommend that all water-closets " should be furnished with separate water cisterns for flushing " purposes."

From Finedon Urban District, the report is as follows:— " The Contractors for the removal of the house-refuse and " night-soil are new to their work, so it is hardly fair to be too " critical. I should like them to be more careful in emptying " the pails, and to use disinfecting powder to the empty pails."

In the St. James' (N'ton) Urban District, " The mode of " excrement disposal is by closets, all discharging into sewers, " but scarcely any of them are supplied with a flushing " apparatus except those of the largest houses, with a result " that 67 closets have been blocked during the year, a condition " of things unfavourable to health. Every closet should have " a water cistern to properly flush it, and carry its contents " onwards."

So again, in the Kettering Urban District, it is stated that " There are still many water closets without cisterns, their " cleanliness being dependent only on hand flushing. This, of " course, is a very bad system, but a difficult one to deal with, on " account of the freezing up of the out-of-door cisterns during

" frost. Perhaps a solution of the difficulty may be found after " the Council has become possessed of the Waterworks."

On the same subject, the Medical Officer of Health for the Kingsthorpe Urban District says, "On more than one occasion " I have called the attention of the Council to the necessity of " compelling all owners of houses to provide a separate water " cistern for the flushing of the closets, so that the flushing of " the house drains, also the main culverts, should be more " complete. During the year this has been enforced so far as to " apply to all new houses erected; but seeing that at the present " time nearly all the houses are without this requisite, it would " have been much more satisfactory if this could have been " made to apply to every house in the District." In regard to other matters relating to the disposal of refuse in his District, he makes the following remarks. Whilst making enquiries into an outbreak of Enteric Fever in the Semilong division, he " found that a large number of the houses had the bell trap in " use for sealing the drains. In all the houses where these " cases occurred, they were removed and re-placed by a more " efficient trap." He adds further, that "At the present time, " the Sanitary Inspector is making a house-to-house inspection " of this District, and it is hoped that we shall be able to " entirely displace this sanitary blot." Again, he says that "All " the houses in the District are now connected with the main " sewerage system. This has done away with a very large " number of middens and cesspools, the contents of which " filtered into the subsoil generally near to the houses, and was " consequently a constant source of danger." He likewise refers to the trouble that has arisen from the keeping of pigs in unsuitable places, but states that "this has been very considerably " mitigated of late."

With regard to the disposal of excrement and house refuse in the Raunds Urban District, the Medical Officer of Health writes thus:—" As regards scavenging and the disposal of " excreta and house refuse there is not much to complain of, at

" the same time, I hope that as soon as the connections of house " drains to the new common sewer are allowed to be made, we " may be able to make great improvements in that direction. " The pail system, which is the one carried on here for some " years works fairly well, but as it is carried out it is far from " being as safe and clean as it ought to be, and when your " Council comes to adopt the plan of keeping your own " scavengers and carts, which I am glad to say you propose doing " at no distant date, then I should advise the pail system still to " be carried on, but on quite a different system which I have " already mentioned to you, and at the same time I think I shall " be able to advise you upon the adoption of a better and cleaner " method of disposing of house refuse, both of which methods " can be much better carried out, and cheaper, by your own " scavengers and carts."

At Rothwell, attention is again called to the matter of defective drainage of some property in Wales Street, and it is hoped that this will be remedied.

There are but few references to these important matters in the reports from the Rural Districts; but the Medical Officer of Health for the Easton-on-the-Hill District again advises " that, " where possible, Privy-vaults should be done away with, and " earth-closets with pails substituted."

In the Middleton Cheney District, too, it appears that " Attention is still being paid to the proper trapping and general " improvement of drains in connection with the cottages."

Throughout the Oundle District, the closets " are chiefly on " the old uncemented pit system, with the exception of the " villages of Thorpe, Achurch, and Hemington, which have pails " or cemented pits." At Kingscliffe, " The greater part of the " housedrains in the village are merely gullies made in the rock, " with no outlet. The house slops are getting away in the " crevices of the rock, and polluting the surrounding soil. A " few of the closets are on the pail system, but the majority are " uncemented pits, some of which remain unemptied for years."

In his report for the Thrapston District, the Medical Officer of Health writes thus in reference to the town of Thrapston :— "During the year I drew your attention to the need of Public "Scavenging. I regret to say that my suggestions were not "carried out. I hope the matter will come up again before long. "I certainly think that in a growing town like Thrapston, to "remove all refuse is as much a public duty as lighting or "paving, and should not be left to private individuals." He also says with regard to Clapton, "Almost all the houses in this "village have had their drains repaired and trapped, and the "sinks cut off from connection with the Sewer."

Flushing of Closets.—I commented last year on the uniformity of the opinions expressed by different Medical Officers of Health against the closets which depend on flushing by hand for their cleanliness. The reports now to hand are not less emphatic in their condemnation of this system of excrement disposal.

In this connection, therefore, it may be worth while to refer to some experiments which have been made in recent years to test the power of flushing-cisterns to cleanse a water-closet after use. The points specially aimed at in the experiments were in respect of

(1) the effect of the flush in removing the matters deposited in the closet basin from such basin and trap connected with it ;

(2) the effect of the flush in clearing the drain ; and

(3) the effect of the flush in clearing the disconnecting-trap at the junction of the drain with the sewer.

The results of the experiments were as follows :—

(1) As regards the closet trap, with a two-gallon flush, 5 per cent. of the excreta was retained in the trap, while, with a three-gallon flush, only 1 per cent. remained ;

(2) In the drain, whether of 4 inch or 6 inch diameter, with a fall of 1 in 40, after a two-gallon flush, 21 per cent.

of the excreta remained in the drain, while, with a three-gallon flush, there was only three per cent.; and

(3) In the disconnecting-trap at the end of a drain 50 feet long, with the same fall, with a two-gallon flush, the retention of excreta in the trap amounted to 36 per cent., while, with a three-gallon flush, the amount was 26 per cent.

It has thus been made plain that the *minimum* flush for a water closet should be from a *three-gallon* cistern, instead of the more commonly used two-gallon cistern, and the experiments serve to emphasise the enormity of permitting the flushing of closets, drains, and sewers to depend on the mere inclination or casual intelligence of the users. It is greatly to be hoped that, in all the Districts of the County where the hand-flushed closets are in use, persistent endeavours will be made against their continuance as such and for their being furnished with proper flushing cisterns.

Sewerage and Sewage Disposal.

In respect of sewerage and sewage disposal, there are in many of the reports to hand important references to progress which has been made during the past year, and this is certainly a satisfactory feature of the manner in which these matters are now being regarded.

It is, however, to be regretted that the Drayton portion of the Borough of Daventry continues to remain, in respect of its sewerage, in the same condition as previously reported on by the Medical Officer of Health.

On the other hand, in the Borough of Higham Ferrers, "Good progress is being made with the construction of the new "out-fall to the sewer which, when completed, will effectually "prevent any further contamination of the river."

In the Far Cotton Urban District, there were many complaints of smells arising from the manholes of the sewers. I

made a careful inspection of the system of sewers with the Medical Officer of Health, the Surveyor, and some members of the District Council, and, while it was impossible not to be struck with the excellence of the system in the circumstances of the District and of the admirable flushing arrangements in force, I could not but urge the adoption of a more complete scheme of ventilation for the sewers especially in the low-lying parts of the District.

The Medical Officer of Health for the Finedon Urban District writes as follows :—" In referring to the Sanitary " conditions of the town last year, I congratulated you on the " near completion of the new Sewage scheme. The improved " health of the town speaks of the good it has already done. " There are, however, many connections not yet made, owing to " our shortness of water for flushing purposes. There is room " yet, I think, for improvement in the ventilating of the sewer."

In the St. James' (N'ton.) Urban District, " The Sewage is " first received into a 20ft. tank, 30 feet in diameter, with iron " cover, and thence pumped by two Engines to the Sewage Farm " (15 acres) 1 mile away." It is there treated by broad irrigation, and appeared to be satisfactorily dealt with on the occasion of my inspection of the Works and Farm.

The following important report is made by the Medical Officer of Health for the Kettering Urban District :—" During " the year the new Sewage Disposal Works have been completed, " except for the laying-out of the land, which is now in hand. " The works comprise two additional precipitation tanks of the " design known as " Dortmund Tanks." They are each 25ft. in " diameter and 40ft. deep below overflow level; the sides are " vertical for 20ft. below this level, this portion of the tank " having a vertical cylinder; below this the sides slant inwards " so as to form an inverted cone 20ft. deep, the apex being at the " bottom. Practically the whole of the solids in the sewage are " precipitated in these tanks, and subside as a sludge into the " conical bottom, from which it is automatically delivered into a

"new sludge pit when the delivery valves are opened. The "effluent from the tanks is taken to the new filter beds, three of "which have an area of 1,800 square yards and one of 1,400 "square yards. The system of filtration adopted is known as "'Dibdin's System.'" The outlet valve of a bed is kept closed "while the bed is filling with effluent and opened after a short "rest, the effluent being drained off slowly. Each bed is thus "thoroughly aerated each time it is emptied, as the air follows "the effluent as it is drawn off through the bed—a condition "necessary to the bacterial life required for the purification of "the sewage. The sewage is at present only treated with a "little lime, which is applied in the form of solution, to assist "precipitation. Although the land is not yet being used, the "effluent is considerably improved. The total cost of these "works, including the purchase of the land, has been about "£18,500. A system of Town Drainage supplementary to the "existing drainage has been completed, a number of new sewers "having been constructed at better depths than the old one; the "old sewers being connected with surface water drains. And a "large number of new surface water drains have also been con-"structed, so as to provide the whole town, except a small "district in the centre, with a dual system of drainage, the "surface water being discharged into the brook at a number of "outlets instead of entering the sewers and discharging at the "Works. This plan gives considerable relief at the Sewage "Disposal Works in time of storm. Many fresh ventilators, "raised well above the houses, have been built. The total cost "of these works has been about £11,500."

With regard to the Kingsthorpe Urban District, the Medical Officer of Health says that, "As a result of the protracted "drought and exceptionally hot weather during August and "September, foul odours were complained of as escaping from "the manholes, more particularly in the Semilong District. To "remedy this, flushing of the culverts was freely carried out by "the Council's water carts; and packets of carbolic powder "were distributed to every house in the District, with printed

" instruction stating that on a certain day at a fixed time the " powder should be put down the water-closets, and the closets " flushed with two or three buckets of water, hoping by these " means to thoroughly flush and cleanse the whole drainage " system." He further adds, "I would also suggest that the " Bye-laws as to the erection of ventilating shafts to the drains " should be more rigidly enforced."

With respect to Rothwell Urban District, the report sets forth that in "A town increasing as rapidly as Rothwell is, its " sanitary condition cannot be expected always to keep pace " with its growth—time is, and must be required to perfect its " system of drainage. Keeping this in view, we don't think " there is much to complain of."

Taking now the reports from the Rural Districts, it appears that, in the Brackley District, "During the year further work " has been done in connection with the sewers in the villages" of Crowfield, Eydon, and Helmdon, "and at Croughton portions " have been relaid with glazed socket pipes. The proposals with " regard to Syresham are still under discussion, and plans have " been prepared for the efficient sewering of the two principal " streets."

At the village of Walgrave, in the Brixworth District, " The Filtration Bed has been enlarged by an acre, and the " outfall of the Sewer extended to the new Bed."

The Medical Officer of Health for the Daventry District reports as follows:—"Towards the end of April I inspected " the village of Staverton, and found the southern part of the " village drained by stone drains; in my report of May 16th, I " advised that this part of the village be relaid with socketted " pipes. I also suggested that filter beds be put at the outlet of " the village sewage; this work I should be glad to see carried " out. On August 19th, I visited Woodford-cum-Membris " regarding the drainage of the village, and in my report of " August 23rd I pointed out the urgent need of re-draining the

" whole village, and the construction of a Sewage Farm. This " matter is now in the hands of the Daventry Surveyor for the " preparing of a scheme to carry these suggestions out, and I " trust that before long the work may be commenced." His reference to the need of a sewerage scheme for the village of Long Buckby is included, in this report, with those matters which more directly refer to the prevention of 'River Pollution.' He further adds that " In Braunston, old drains were taken up and " relaid with socketted pipes for a distance of about 176 yards; " in Everdon, for about 100 yards; in Byfield, for about 90 yards, " and in Badby, for about 34 yards."

In respect of works in the Hardingstone District, the Medical Officer of Health reports thus:—" A sewage scheme, " after about ten years, has at last received the sanction of the " Local Government Board for the village of Roade. The works " are now in progress, but the tedious delays interposed by the " Board above have been so irksome that it is a marvel that " anyone in Roade is left alive to avail themselves of the new " system. A sewage scheme is being prepared for the village of " Brafield, by Messrs. Dorman & Son; it has been in preparation " for two years already, and no further progress seems to be " made, so in time I should think the Son will carry out the " works. The old sewage scheme at Yardley Hastings has " proved a failure, and the matter has now been referred to " Messrs. Sharman and Archer, who are preparing a new scheme. " The sewers at Hardingstone have been extended during the " year, and a considerable number of the old privy cesspools " have been abolished and the closets laid into the sewers. The " sewage farm at Hardingstone is not altogether satisfactory; " the beds require re-laying, so that there can be a better " distribution of the sewage over the whole of the ground. I " have had to report on the drainage of a group of cottages " between Billing Road Station and Cooknoe. This forms " almost a separate small village of itself, and belongs to one " person who pays somewhat largely to the rates at Cooknoe. " The sewage from these cottages must, from their position, have

" a separate system, and I consider a scheme should be carried " out by your Council for treating this sewage. The sewage farms " at Milton and Little Houghton are working well; the one at " Denton is not always so satisfactory."

It appears that, in the Kettering District, new sections of drainage have been laid at the villages of Burton, Warkton, Harrington, and Geddington, and the sewage scheme for Broughton is under discussion.

In the Middleton Cheney District, "The main sewers in " Middleton Cheney, Overthorpe, and Chipping Warden have " undergone repair."

The report of the Medical Officer of Health for the Northampton District is as follows:—" Building operations have lately " commenced at Duston, and the need of a public sewer for this " village has been strongly urged on you by some of the " inhabitants. At present, though some water closets are " connected with it, there is only an old stone drain down the " village, and the smell from it at times calls forth many " complaints, besides causing fears lest the water supply of the " village should become contaminated. It was impossible that " such a state of things should continue, and your Council are " now engaged in getting out plans for the proper drainage of " this village. In the same way, complaints have been brought " before your Council during the year as to the drainage, and " other matters, at Weston Favell. The drains empty into a " ditch just below a farm-house, and undoubtedly, without a good " deal of attention, the stagnant sewage is often very offensive. " By prolonging the drains a short distance, and passing the " sewage over some land, this nuisance would soon be abated, " and the levels would be very easy for this treatment. The " cost should not be great, and when the Duston scheme is com- " pleted, I hope your Council will be able to take this matter in " hand."

With regard to places in the Thrapston District, it appears that in the town of Thrapston itself, "The question of sewage "disposal is still undecided. The Parish are giving the matter "most careful consideration; at their request, I procured "information respecting the various methods of purifying "sewage, and attended one of their meetings. I should say that "coke breeze filter beds would be found to answer the purpose." It is greatly to be hoped that the District Council will definitely decide on the system of sewage disposal, which they intend to adopt, before the expiration of the time allowed them for this purpose by the County Council. At the village of Great Addington, "The improved drainage arrangements were completed, the "sewage going on to the land instead of into the brook." "New drainage has also been laid down" in the village of Little Addington, while, at Chelveston, "An entire new system "of drainage was laid down in this village during the year." From the report, it appears that, in respect of Ringstead, "the "drainage of the whole village is a matter which should receive "attention at an early date," while, at Tichmarsh, "A thorough "inspection of the street drainage was also made and improve-"ments, as relaying a portion, trapping and ventilation, carried "out."

In the report for the Towcester District, it is stated that "The disposal of the Sewage of Towcester has been a vexed "question of the year; as it is still *sub judice*, it may be enough "here to refer to the matter with the hope that it may soon be "satisfactorily dealt with in one way or another."

The Medical Officer of Health for the Wellingborough District writes thus:—"The drainage of Irthlingborough and "Little Irchester are in an unsatisfactory state owing to the "Inspector from the Local Government Board not approving of "the site for a Sewage Farm. The Parish Councils of Little "Irchester, Great Harrowden, and Ecton have the drainage still "under consideration. The Earls Barton Sewage Farm is very "unsatisfactory. In July, in conjunction with Mr. Paget, the

" Medical Officer to the County Council, I inspected the Sewage " Farm at Earls Barton, and advised the Rural District Council " as to certain improvements which I hope will be carried out " in due course."

River Pollution.

This seems the best place in which to record both what special action is being taken to prevent pollution of the waters of the County, and to indicate where further action is required.

In the first place, the pollution of the River Nene below Earls Barton by the effluents from the Northampton Borough Sewage Farm still continues; but the Corporation have undertaken certain works on and in connection with their Farm, by which they hope to abate the injurious effects on the river caused by their effluents at the present time. Continuous observations will be taken with a view to expediting matters in this highly necessary direction.

In the Borough of Brackley, as a result of representations made, it has been " determined to make a very necessary " extension of the Banbury Road Sewer, which is to be carried " on to the sewage farm instead of discharging into the brook " near the gas works."

In the St. James' (N'ton.) Urban District, " The stream on " the north side of Watkins' timber yard has been fouled by " refuse, and ordered to be cleaned out."

The Medical Officer of Health for the Raunds Urban District says, " I am glad to note that the obnoxious vapours " from the Raunds Brook have been greatly modified during the " year, by the worst parts, or I might say the greater part, " having been thoroughly cleaned out, and in some places new " side walls built. I also consider that the new inverted arch " which has been laid in certain parts has been of great benefit. " As soon as the New Sewer comes into operation, I hope that " the brook, which has always been both dangerous and unsightly, " may become inoffensive or at any rate much improved."

At the village of Moulton in the Brixworth Rural District, it is said that "contamination of the Brook by sewage matter "has been rectified," and, at Guilsborough Grange, "Pollution "of one of the feeders of the Teeton Reservoir has been stopped "by the construction of a pit filter and underground irrigation."

So also, in the Daventry Rural District, "Early in the year "attention was drawn to the pollution of a stream that passes "through the Parish of West Haddon into the Teeton Reservoir; "it was found beyond doubt that the cesspool overflow, and the "domestic waste-water, from the West Haddon Manor House "flowed into this stream. Notice was served on the owners to "cease this pollution, and, after some little difficulty, this over-"flow and waste-water were diverted into an open field, through "which it now undergoes filtration and prevents any pollution "of the stream." In connection with the scheme of water-supply to the village of Long Buckby, the Medical Officer of Health adds, "While this work is progressing, it is necessary for me to "point out the need of, (at the present time), carrying out a "sewage scheme for the village; this is a matter of absolute "importance, as at the present moment there is pollution of the "surrounding streams taking place."

The Medical Officer of Health for the Hardingstone Rural District reports as follows:—"The drainage of Delapré Abbey "into a pond close to a public footpath has been brought under "your notice during the year, also of some cottages at the Paper "Mills which drain directly into the river: up to the present no "satisfactory steps have been taken in regard to these matters."

It is satisfactory to learn from the report for the Kettering Rural District, that "The great alterations which have been "made and are being made at the Kettering Sewage Works "have already greatly improved the condition of the effluent "into the Ise Brook, and when the works are completed the "effluent will be all that can be desired, although, of course, the "accumulation of former years of imperfectly purified sewage "will take some time to disappear."

The Medical Officer of Health for the Oundle Rural District says, in reference to Polebrook, that "the brook in this "village is a foul recurring nuisance every summer. I think the "drainage of the place is a matter which should receive careful "consideration at an early date."

The report from the Potterspury Rural District is as follows:— "With the exception of the outfall at Old Stratford, pollution "of a river may be said not to exist in the District. The said "outfall was inspected by the County Medical Officer of Health, "and steps are being taken to rectify the same on the lines "recommended in the annual report for 1897."

During the summer, the Chairman of the Public Health Committee and I inspected the pollution of the brook at Rothwell by the effluents from the Rothwell Urban District Councils' Sewage Farm. As a result of this inspection, orders have been given by the District Council for additional Sewage Tank accommodation for the treatment of the sewage and the relief of the irrigation area.

The Medical Officer of Health for the Thrapston Rural District says in respect of the village of Ringstead, "I drew "your attention to the condition of the Brook, which becomes "very foul in dry weather," and, further on, "The Brook at "Stanwick like that at Ringstead is reported by the Sanitary "Inspector to be 'nothing but an open sewer.' I think this is a "matter which requires attention."

Lodging-Houses.

The only references to common lodging-houses in the reports are in respect of the Borough of Daventry, and the town of Kettering. Those in the former place were "regularly inspected, "and the occupiers have been required to keep them in proper "sanitary condition," while "The single licensed lodging-house "in Kettering has on every inspection been found clean, and "never overcrowded. No cases of infectious disease have "occurred there."

Slaughter-Houses.

The slaughter-houses in different Districts of the County seem to have been kept well under observation.

In the Borough of Daventry, they were regularly inspected, and kept in proper sanitary condition. The Medical Officer of Health, however, further adds, "I should also like to suggest to "you the advisability of appointing a duly qualified Veterinary "Surgeon to make periodical visits of inspection to the "Slaughter-houses and Dairies within your district, having power "to condemn all meat and milk from diseased animals, as this "duty falls properly within the province of the Veterinary "profession."

In the Desborough Urban District, "The Slaughter-houses "have been inspected and found to be satisfactory. An appli- "cation having been made for licence for a Slaughter-house in "Lower Street, the Council granted the same as the building "was found to meet the requirements of the Bye-Laws."

In the Far Cotton Urban District also, it is said that "The "Slaughter-houses have been kept in good order;" likewise, in respect of the five Slaughter-houses in the St. James' (N'ton.) Urban District, "these have all been inspected regularly, from "time to time, and found in a satisfactory state."

The following is the report of the Medical Officer of Health for the Kettering Urban District:—"With regard to the "Slaughter-houses, although I believe those using them have "done their best to keep them in good condition, there can be no "doubt that some of them are not fit for the purpose, and much "more work is carried on than there is proper arrangement and "accommodation for. It is quite time that a Public Slaughter- "house should be provided, as I have remarked in several "previous reports. It is impossible to make an efficient inspection "of meat in so many places; whereas, if a public place was used "every animal could be inspected before death, and every

" carcase afterwards, so that the sale of tuberculous meat could " be entirely prevented. And this is a question which is coming " to the front very rapidly."

In the Easton-on-the-Hill Rural District, "The slaughter- " houses have been inspected as usual," so also in the Gretton Rural District, where it is recorded that they were "generally " found clean and in good order," and in the Middleton Cheney Rural District.

The report from the Oundle Rural District is that, "An " inspection of the Slaughter-houses in the District was made " by the Sanitary Inspector and reported as satisfactory," while one defective Slaughter-house was dealt with in the Oxendon Rural District. In the Wellingborough Rural District, two Slaughter-houses were found in an unclean condition, which was immediately rectified, and several alterations to drains at Slaughter-houses were made.

This seems to me to be the best stage at which to refer to some of the findings of the Royal Commission appointed to inquire into the administrative procedures for controlling danger to man through the use as food of the Meat and Milk of Tuberculous Animals. The report of this Commission was presented to Parliament in 1898. Some of the conclusions of the Royal Commissioners relate to Slaughter-houses, and these are important. Thus, they recommended that

" (*a*) When the local authority in any town or Urban District " in England and Wales and Ireland have provided a " public slaughter-house, power be conferred on them to " declare that no other place within the town or borough " shall be used for slaughtering, except that a period of " *three* years be allowed to the owners of existing " registered private slaughter-houses to apply their " premises to other purposes. The term of *three* years to " date, in those places where adequate public slaughter- " houses already exist, from the public announcement by

" the local authority that the use of such public slaughter-
" houses is obligatory, or, in those places where public
" slaughter-houses have not been erected, from the public
" announcement by the local authority that tenders for
" their erection have been accepted.

" (*b*) That local authorities be empowered to require all meat
" slaughtered elsewhere than in a public slaughter-house,
" and brought into the district for sale, to be taken to a
" place or places where such meat may be inspected; and
" that local authorities be empowered to make a charge
" to cover the reasonable expenses attendant on such
" inspection.

" (*c*) That when a public slaughter-house has been established,
" inspectors shall be engaged to inspect all animals
" immediately after slaughter, and stamp the joints of all
" carcases passed as sound."

Stringent as these recommendations may seem to some to be, they cannot reasonably be considered in excess of the requirements of man for the security of his meat supply in towns. The Royal Commissioners recognised fully that the case of Rural Districts was not so easy to deal with; nevertheless, their pronouncement was emphatic :—" But the difficulty is one " that must be faced, otherwise there will be a dangerous " tendency to send unwholesome animals to be slaughtered and " sold in small villages where they will escape inspection. We " recommend, therefore, that in Great Britain the inspection of " meat in rural districts be administered by the county " councils."

The further recommendation was made that it should not be lawful to offer for sale the meat of any animal which had not been killed in a duly licensed slaughter-house.

I cannot but believe that, if effect be given to these recommendations of the Royal Commissioners by the Legislature, the greatest step yet taken will have been made towards the

elimination from our markets of that tuberculous meat, the consumption of which by man is liable to produce tuberculous disease.

Dairies, Cow-Sheds, and Milk-Shops.

There are rather more references to the inspection of the Dairies, Cow-sheds, and Milk-shops in the reports of the District Medical Officers of Health for the year 1898 than there were for 1897. At the same time, in respect of the acquirement of tuberculous disease from tuberculous cattle, the inspection of milch cows and their dwellings is even more important than the inspection of slaughter-houses.

There can be no doubt of the opinion of the Royal Commissioners already named as to the action which ought to be taken to ensure the freedom of milk from tuberculous elements. They recommend, for instance, that notification of every disease of the udder should be made compulsory on the owners of all cows, whether in private dairies or those of which the milk is offered for sale; that local authorities, which have not done so already, should be required to adopt regulations as to dairies, cow-sheds, &c.; and that, in future, no cow-shed, byre, or shippon, other than those already registered, should be permitted in *Urban* Districts within 100 feet of any dwelling-house.

One of the most important recommendations, too, is the following:—"That the condition of the attached cow-sheds that shall "warrant the registering of a dairy in a populous place, whether "technically urban or rural, in the future shall include the "following:—

"1. An impervious floor.

"2. A sufficient water supply for flushing.

"3. Proper drainage.

"4. A depôt for the manure at a sufficient distance from the byres.

"5. A minimum cubic contents as regards such districts of from 600 to 800 feet for each adult beast varying according to the average weight of the animals.

"6. A minimum floor space of 50 feet to each adult beast.

"7. Sufficient light and ventilation."

The Commissioners, however, recognised that modifications of the cubic contents for cows were possible in sparsely populated places, and that "as regards these cubic contents, such "space per cow should be provided as would, in view of the "surrounding circumstances, secure reasonable ventilation with-"out draught."

In view, therefore, of the importance of the subject, I sincerely hope that those District Councils in this County, which have not as yet acquired regulations as to dairies, cow-sheds, and milk-shops, will take steps to remove this flaw in their administration without further delay.

With regard to the references which have been made in the reports of the Medical Officers of Health for the Urban Districts, it appears that, in the St. James' (N'ton.) District, "there are "six Dairies, five Cow-sheds, and four Milk-shops," and that these have been found in a satisfactory state on inspection. So also, in the Far Cotton District, "the Dairies have been kept in "good order," and, in the Rothwell District, "As usual, the "principal Cow-sheds and Piggeries were looked at in our round "of inspection and were found in a fairly satisfactory condition."

The Medical Officers of Health for the Desborough and Kettering Districts, however, deal with these matters at greater length in the following extracts respectively from their reports:—

"The Dairies and Cow-sheds have also been from time to "time inspected. Although improvements have been made by "the Cow-keepers on their premises, yet in some cases there is "room for still greater change in that direction, and as a con-"sequence these places require constant vigilance from your

" Inspector. I would here make note of the fact that some " milk-sellers are in the habit of conveying milk from house to " house in uncovered pails. Under these conditions, the micro- " organisms of Diarrhœa and other diseases gain easy access to " the milk,—the main food of so many of the younger members " of our population. The practice is one which cannot but be " strongly condemned, and the public should insist on having " their milk supplied under the most sanitary conditions."

" No illness has been traced to the Milk supplies during the " past year. A very large proportion of the Milk consumed in " Kettering is produced in the villages of the neighbourhood; and " I have from time to time unofficially examined the conditions in " which the cows have been kept without discovering any great " fault in their surroundings. I consider, however, that more care " might be used as to cleanliness in those who milk the cows. " Certainly accommodation should be provided for the washing of " the hands of those employed before milking, and the practice " which some milkers use, of, as it were, washing their hands with " the milk at the beginning of the operation, is a filthy one, as the " milk frequently goes straight into the large cans to the dairies, " and is then used without boiling in many instances."

In respect of the Rural Districts, " The Dairies have been " inspected as usual " in the Easton-on-the-Hill District, but " These are not registered and no regulations exist " in the Gretton District. In the Potterspury District, " These places " were under supervision, but no cause for interference was " observed." The Medical Officer of Health for the Thrapston District says, " I also drew your attention to the Milk Shops " and Dairies Order, and directions were given for registration " and inspection of premises used by purveyors of milk." The Inspector for the Wellingborough District appears to have made several surprise visits, with the result that, in one case, cow-sheds with accommodation for 20 cows were found in a filthy and insanitary condition for want of proper draining, ventilation, &c. These cowsheds are said to have been put in thorough repair, new floors being laid, and the premises drained throughout.

Bake-Houses.

There are not many remarks in the reports on the subject of bake-houses; they are stated, however, to "have been "inspected and found to be satisfactory" in the Desborough Urban District, likewise the 8 bakehouses in the St. James' (N'ton.) Urban District, while, in the Kettering Urban District, they have, "on the whole, been well kept, and the regulations "required in such places well carried out."

Among the Rural Districts, it appears that the bakehouses "have been inspected as usual" in the Easton-on-the-Hill District, inspected and generally found clean and in good order in the Gretton District, so also in the Middleton Cheney District, and in the Wellingborough District, while, in the Potterspury District, they "were under supervision, but no cause for inter-"ference was observed."

Food Inspection.

From the Desborough Urban District, it is reported that "in no case has it been found necessary to condemn articles of "food as unfit for human consumption," in the Finedon Urban District, it is said that "there has been no article of food exposed "for sale condemned," in the St. James' (N'ton.) Urban District "that food has been inspected at various times, without the "necessity for any seizure," while it is reported from the Kettering Urban District that, "Meat, Fish, and Fruit have "been frequently inspected, and on several occasions it has been "found necessary to destroy articles. Amongst these were a "very large quantity of Shrimps, some Fish, and Rabbits."

In the Potterspury Rural District, it is said that there was no "case of unsound food exposed for sale"; but, in the Wellingborough Rural District, "some putrid fish was seized and "condemned, the vendor being summoned, convicted, and fined."

Cemeteries and Churchyards.

The Medical Officer of Health for the Desborough Urban District says that, "The acquisition of a Cemetery for the

" district is now an accomplished fact. The ground has been " tastefully planted with shrubs and trees, and a Chapel of " Gothic design has been erected upon the enclosed land."

The information from the St. James' (N'ton.) Urban District is that, " The churchyards at Duston and Dallington, with the " Cemetery at the latter place, $1\frac{1}{2}$ miles away, are sufficient for " present requirements."

In the Kingsthorpe Urban District, the Medical Officer of Health, in speaking of improvements in the District, refers to " the completion of a new cemetery, which is placed on a most " suitable site away from any inhabited houses, and at the same " time in a most accessible position."

Factories and Workshops.

There is more mention of the inspection of Factories and Workshops in the reports for the year 1898, than for 1897.

The report from the Desborough Urban District, is as follows :—" The Factories and Workshops of the district have " been visited, and the sanitary arrangements there found " satisfactory."

In the Kettering Urban District, " The Factories, too, " have been kept in a good sanitary condition, and well ventilated, " without overcrowding. As the town grows in size, and the use " of machinery in every branch of trade increases, more " accidents naturally occur, and some of them lately have been of " a very serious nature. The new General Hospital seems to have " come into use just at the time when it would have been almost " impossible to do without it; and its usefulness is constantly " increasing."

In the Raunds Urban District, " Shoemaking being the " staple trade here, it is most important that factories and " workshops should be kept in a well ventilated, well lighted, and " sanitary condition. That this is the case I think there is no " doubt. The factories all seem about as perfect as they can be,

" and as healthy as they ought to be. I have not seen either in " the factories or their surroundings anything that would tend " to be prejudicial to the lives of the workmen, nor have I had " any complaints. The workshops in connection with the home- " workers have been much improved of late, and within the past " few years a large number of new shops have been built " adjacent to the houses, so that very few men have now to work " and live in the same house. These new workshops, which are " well lighted and ventilated, have been of much benefit to the " workers, as well as allowing the houses themselves to be kept " in a cleaner and healthier condition."

As regards the Rushden Urban District, "A systematic " inspection of the town including workshops and factories has " been made; the latter were chiefly in a sanitary condition."

The Medical Officer of Health for the Gretton Rural District says, "The clothing Factory is visited by me, and the " out-workers list examined, and the provisions of Section 6 of " the Factory and Workshops Act, 1895, are fully observed."

In the Potterspury Rural District, "These places were " under supervision, but no cause for interference was observed."

Bye-Laws.

There is no record from the Borough of Brackley that any bye-law, to fix the distance from a dwelling at which pigs may be kept, advocated in the previous year by the Medical Officer of Health, has been framed for that place. I can only say, from my own personal observation, that the framing and enforcement of such a bye-law is more than desirable in that Borough.

So too, for the Borough of Daventry, the Medical Officer of Health says, " I should like to recommend that a more strict " rule be enforced with regard to the keeping of pigs, none of " which should be allowed within 50 yards of a dwelling-house " or its premises within the town."

In the St. James' (N'ton.) Urban District, the bye-laws relate to the Cleansing of Footways and Pavements, Nuisances, New Streets and Buildings, Slaughter-houses, Offensive Trades, and Removal of House Refuse. These are dated September, 1897.

The Medical Officer of Health for the newly-constituted Raunds Urban District reports thus :—" Our bye-laws, which " have been drawn up by you and sanctioned by the Local " Government Board, come into operation now, and I am glad to " say they will be of immense benefit to the public health, " giving the Council through their Officers powers to regulate " matters affecting the health of the town, in which up to now " they had no power to interfere. The Acts which have been " adopted by the Council are 'The Infectious Disease Notification " Act,' 'The Public Health Acts Amendment Act (Part III.), " 1890,' 'The Prevention of Diseases Act, 1890.' "

The Medical Officer of Health for the Daventry Rural District says, " I should be glad to see the Model Bye-Laws of " the Local Government Board adopted in the district, as I " believe they would be helpful in carrying out many needed " reforms for the good of the Public Health."

Bye-Laws have been framed for the villages of Burton Latimer and Broughton in the Kettering Rural District, with resulting great improvement in the buildings there.

The following is the report of the Medical Officer of Health for the Towcester Rural District :—" In accordance with a " request of the Public Health Committee of the County " Council made through the County Medical Officer of Health, I " brought before you the desirability of adopting Part III. of the " Public Health Acts Amendment Act, which confers powers on " Rural Sanitary Authorities in some points analogous to those " of Urban Districts. It may be hoped that with the powers so " obtained, some simple Bye-Laws may be framed which will " facilitate and make more efficient the sanitary work of the

" district, particularly with regard to the privy and ashpit
" question which has been under your consideration. Whilst it
" is best in the long run to move quietly in sanitary reform, and
" so avoid unnecessary expense and friction with regard to new
" buildings, some regulation which would require all new
" houses to have sanitary conveniences constructed on principles
" approved by the Authority would be especially valuable, and
" would ultimately undoubtedly save expense to the owners."

CHARLES E. PAGET,
County Medical Officer of Health.

Northampton,
May, 1899.

TABLE OF DEATHS,

During the year 1898, in the **URBAN SANITARY DISTRICTS** of the Administrative County of Northampton, classified according to **DISEASES, AGES,** and **LOCALITIES.**

URBAN SANITARY DISTRICTS.	Mortality from all Causes at subjoined Ages.							Aged under 5 or over 5.	Mortality from subjoined Causes, distinguishing Deaths of Children under Five Years of Age.																				
													Fevers.																
	At all Ages	Under 1 year.	1 and under 5	5 and under 15	15 and under 25	25 and under 65	65 and upwards		Small-pox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.	Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhœa and Dysentery.	Rheumatic Fever.	Influenza.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Injuries.	All other Diseases.	Total.
BRACKLEY (BOROUGH)	46	6	2	1	3	10	24	Under 5																1	1			6	8
								5 upwds.																1	2	4	7	1	23	38
DAVENTRY (BOROUGH) ...	70	13	9	1	3	11	33	Under 5		1										4	2	3			1	3	1		7	22
								5 upwds.														2		1	3	10	6	1	25	48
HIGHAM FERRERS (BOROUGH)	27	9	3		2	5	8	Under 5													2				3			7	12
								5 upwds.																	2	1		9	15
DESBOROUGH	49	15	4	3	4	11	12	Under 5		1												3		1		3			11	19
								5 upwds.					2			1							1	2	4	4	5		11	30
FAR COTTON	45	24	7	1		7	6	Under 5												2	2	3			1	4			19	31
								5 upwds.																2			2		10	14
FINEDON	53	14	8	3	2	15	11	Under 5												2		6				3			11	22
								5 upwds.		1		2													6	1	4	1	16	31
ST. JAMES', NORTHAMPTON ...	79	31	15	2	8	15	8	Under 5			1									2	1	15				4			23	46
								5 upwds						1					1						6	9	3		13	33
KETTERING	417	153	69	20	19	77	79	Under 5		3		1								16	4	6			1	55	4	3	129	222
								5 upwds.			1	1		4			1			2		1	1		30	11	27	8	108	195
KINGSTHORPE	196	81	21	7	9	40	38	Under 5		7	1									7	5	9			1	11	4	1	56	102
								5 upwds.		3				4					3						10	12	10		52	94
OUNDLE	35	1	2	3	1	10	18	Under 5				1										1							1	3
								5 upwds.		1													1		3	5	4	3	15	32
RAUNDS	45	15	1	4	2	8	15	Under 5																		4			12	16
								5 upwds.			1			1											2	4	5		16	29
ROTHWELL	58	23	7	2	4	13	9	Under 5				1								1		2				6			20	30
								5 upwds.						2												8	3		15	28
RUSHDEN	192	85	33	9	11	33	21	Under 5			1									11	9	12			8	18			59	118
								5 upwds.						1			2					1			17	13	13	6	21	74
WELLINGBOROUGH	219	68	12	12	8	60	59	Under 5		3	3	1								1	1	7			2	9	1	1	51	80
								5 upwds.		6	1			1											15	15	25	7	69	139
Totals	1,531	538	193	68	76	315	341	Under 5		15	6	4								46	26	67		1	15	124	10	5	412	731
								5 upwds.		11	3	3		16			4		4	2		4	3	6	101	98	115	27	403	800

"Districts" printed in heavy type are those in which there is no Official Notification of Disease.

Table A.

TABLE OF DEATHS,

During the year 1898, in the **RURAL SANITARY DISTRICTS** of the Administrative County of Northampton, classified according to **DISEASES, AGES, and LOCALITIES.**

RURAL SANITARY DISTRICTS.	Mortality from all Causes at subjoined Ages.							Aged under 5 or over 5.	Mortality from subjoined Causes, distinguishing Deaths of Children under Five Years of Age.																				
													Fevers.																
	At all Ages	Under 1 year.	1 and under 5	5 and under 15	15 and under 25	25 and under 65	65 and upwards		Small-pox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.	Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhœa and Dysentery.	Rheumatic Fever.	Influenza.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Injuries.	All other Diseases.	Total.
BRACKLEY	125	22	2	2	2	22	75	Under 5			1											2		1	1	2		2	15	24
								5 upwds.														2	1	5	4	7	32	2	48	101
BRIXWORTH	179	31	13	13	4	29	89	Under 5		2	3									1	3	1				5	1		28	44
								5 upwds.			4	1		1					1	2	1	1	1	2	6	13	14	2	86	135
CRICK...	38	9	1	2	1	11	14	Under 5			1											2				4			3	10
								5 upwds.									1			2						5	1	3	16	28
DAVENTRY	209	33	16	8	9	55	88	Under 5												3	1	3		1		4			37	49
								5 upwds.		1				1			2					1	2	8	4	16	21	7	97	160
EASTON-ON-THE-HILL ...	23	6	1			4	12	Under 5																					7	7
								5 upwds.																2	1	2	2		9	16
GRETTON	19	5		2	1	4	7	Under 5																		2			3	5
								5 upwds.		1													1	1	1	3		1	6	14
HARDINGSTONE	120	20	10	2	7	25	56	Under 5		1												1			4	7			17	30
								5 upwds.																	11	6	14	5	54	90
KETTERING	153	40	19	3	5	33	53	Under 5		1		1								4	4					18		2	29	59
								5 upwds.						2									2	2	7	13	20	1	47	94
MIDDLETON CHENEY ...	35	7	1			9	18	Under 5																					8	8
								5 upwds.						1								1				3	5		17	27
NORTHAMPTON	189	18	7	7	12	64	81	Under 5			2	1										1			2	2		2	15	25
								5 upwds.		1	1	1		1											37	14	20	2	87	164
OUNDLE	100	15	6	1	3	30	45	Under 5		1											1	1				4	1		13	21
								5 upwds.																4	7	9	13	3	43	79
OXENDON	51	11	3	3	4	15	15	Under 5		1		1										1				1			10	14
								5 upwds.		1															3	4	6	1	22	37
POTTERSPURY	86	23	4		4	16	39	Under 5														5				6			16	27
								5 upwds.		2															7	8	9	1	32	59
THRAPSTON	149	27	9	3	6	43	61	Under 5			1								2	2		2		1		7			21	36
								5 upwds.						1					1	1				3	12	19	17	1	58	113
TOWCESTER	170	35	10	5	6	36	78	Under 5		1				1						2	2	1			1	10			27	45
								5 upwds.		1				5							1	1			8	19	6		84	125
WELLINGBOROUGH	197	48	27	21	11	40	50	Under 5		1	4									3	1	15			1	16	1		33	75
								5 upwds.			2	1		2						10		2		3	14	21	13	3	51	122
Totals	1,843	350	129	72	75	436	781	Under 5		8	12	3		1					2	15	12	35		3	9	88	3	6	282	479
								5 upwds.		7	7	3		14			3		2	15	2	8	7	30	122	162	193	32	757	1364

Table B.

TABLE OF POPULATIONS, BIRTHS, AND NEW CASES OF INFECTIOUS SICKNESS

Coming to the knowledge of the Medical Officers of Health, during the year 1898, in the **URBAN SANITARY DISTRICTS** of the Administrative County of Northampton, classified according to **DISEASES**, **AGES**, and **LOCALITIES**.

URBAN SANITARY DISTRICTS.	Population at all Ages.		Registered Births.	Aged under 5 or over 5.	New Cases of Sickness in each Locality coming to the Knowledge of the Medical Officers of Health.												Number of such Cases removed from their Homes in the several Localities, for Treatment in Isolation Hospitals.											
	Census 1891.	Estimated to middle of 1898.			Small-pox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Small-pox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.
									Typhus	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.								Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.			
BRACKLEY (BOROUGH)	2,591	2,700	70	Under 5																							
				5 upwds.		6																						
DAVENTRY (BOROUGH) ...	3,939	3,939	99	Under 5		22				1			1		5												
				5 upwds.		4																						
HIGHAMFERRERS(BOROUGH)	1,810	2,000	74	Under 5		2				1																	
				5 upwds.		1				5																		
DESBOROUGH	2,872	3,654	106	Under 5						28			1														
				5 upwds.		20									1			2									
FAR COTTON	2,182	4,265	120	Under 5		32				1					6												
				5 upwds.		6									1													
FINEDON	3,197	4,200	123	Under 5		6		2		5																	
				5 upwds.		4	1								2	27											
ST. JAMES', NORTHAMPTON ..	4,159	6,000	200	Under 5		23				1						12											
				5 upwds.		56	1	1		1					4			24									
KETTERING	19,454	28,000	948	Under 5		145	1	1		16			1		26			76				7				
				5 upwds.	}	170				10			1		10												
KINGSTHORPE	7,697	12,745	439	Under 5		1		1																			
				5 upwds.		5	3			1					2												
OUNDLE	2,680	2,780	40	Under 5		5				2					1												
				5 upwds.		16	3			6					4												
RAUNDS	3,055	4,100	115	Under 5				1																			
				5 upwds.		3				2			1		3												
ROTHWELL	3,378	4,370	125	Under 5																							
				5 upwds.		3				2					2												
RUSHDEN	7,443	12,000	443	Under 5	}	about 30	1			22			2		2												
				5 upwds.		50	7											4									
WELLINGBOROUGH	15,068	18,600	502	Under 5		205	9			16			1		24			30				7				
				5 upwds.																							
TOTALS	79,525	109,353	3,404	Under 5		812	26	3		118			8		91	27		30				7				
				5 upwds.				3								12		107									

"Districts" printed in heavy type are those in which there is no Official Notification of Disease.

Table B.

TABLE OF POPULATIONS, BIRTHS, AND NEW CASES OF INFECTIOUS SICKNESS

Coming to the knowledge of the Medical Officers of Health, during the year 1898, in the **RURAL SANITARY DISTRICTS** of the Administrative County of Northampton, classified according to **DISEASES, AGES,** and **LOCALITIES.**

RURAL SANITARY DISTRICTS.	Population at all Ages.		Registered Births.	Aged under 5 or over 5.	New Cases of Sickness in each Locality coming to the Knowledge of the Medical Officers of Health.											Number of such Cases removed from their Homes in the several Localities, for Treatment in Isolation Hospitals.										
	Census 1891.	Estimated to middle of 1898.			Small-pox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Small-pox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.
									Typhus	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.								Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.			
BRACKLEY	7,779	7,780	207	Under 5		6	2			1																	
				5 upwds.		3	1			2					3												
BRIXWORTH	12,186	12,220	285	Under 5		4	4																				
				5 upwds.		25	16			3	1				2												
CRICK...	2,427	2,427	71	Under 5			1																				
				5 upwds.			2			1			1		2												
DAVENTRY	13,709	13,709	314	Under 5		4				1																	
				5 upwds.		20	1			23			3		24												
EASTON-ON-THE-HILL ...	1,635	1,650	36	Under 5		3												1									
				5 upwds.																							
GRETTON	1,701	1,683	33	Under 5																							
				5 upwds.		31	1																				
HARDINGSTONE	8,421	8,420	204	Under 5	}	22				1					2			15				1					
				5 upwds.																							
KETTERING	10,561	11,500	297	Under 5		6		1		8					1												
				5 upwds.		21	3			29					9			6				11					
MIDDLETON CHENEY ..	2,606	2,620	70	Under 5																							
				5 upwds.		1				1					1												
NORTHAMPTON	6,449	6,554	182	Under 5	}	32	17	1		7					4			1									
				5 upwds.																							
OUNDLE	7,906	7,805	145	Under 5		20									1												
				5 upwds.		47	2			2			1		5							1					
OXENDON	4,734	4,627	95	Under 5		1		1																			
				5 upwds.		14				2																	
POTTERSPURY	5,930	5,880	143	Under 5		11	3								1												
				5 upwds.		68	2			1					4												
THRAPSTON	10,457	10,514	298	Under 5		11	3								2												
				5 upwds.		30	9			3					1												
TOWCESTER	11,960	11,523	299	Under 5		37				1																	
				5 upwds.		68				9					3												
WELLINGBOROUGH	15,295	16,637	564	Under 5		29	9			1																	
				5 upwds.		71	15			24					12												
TOTALS	123,756	125,549	3,243	Under 5	}	585	91	3		120	1		5		77			23				13					
				5 upwds.																							

TABLE GIVING POPULATION, BIRTH-RATE, CORRECTED DEATH-RATES, &c., Table C.

Within the Urban and Rural Districts of the Administrative County of Northampton.

DISTRICTS.	MEDICAL OFFICER OF HEALTH.	RESIDENCE.	Population 1898 (estimated).	PER 1000 OF POPULATION.		Infant Mortality per 1000 Births.	PER 1000 OF POPULATION.			Notification Act in Operation.	Number of Cases notified.	Hospital Accommodation.	No. of Cases removed to Hospital.	Percentage of Notified Cases removed to Hospital.
				Birth-rate.	Death-rate.		Phthisis Death-rate.	Respiratory Diseases Death-rate	Zymotic Death-rate.					
URBAN :—														
BRACKLEY (Borough)	J. S. FENTON, M.D., D.P.H. ...	Brackley ...	2,700	25·9	10·3	71·4	1·11	0·83	—	**No**				
DAVENTRY (BOROUGH) ..	C. E. OLDACRES, M.R.C.S. ...	Daventry ...	3,939	25·1	15·9	131·3	1·01	2·53	2·79	Yes	35	**Yes.**		
HIGHAM FERRERS (BOROUGH)	J. CREW, M.R.C.S., J.P. ..	Higham Ferrers..	2,000	37·0	13·5	121·9	1·5	2·5	1 0	Yes	7			
DESBOROUGH	H. GIBBONS, M.B.	Desborough ...	3,654	29·0	13·4	141·5	1·09	1·91	1·91	Yes	35			
FAR COTTON	M. E. THOMSON, L.R.C.P. ...	Northampton ...	4,265	28·1	10·5	200·0	0 23	0·93	1·64	Yes	60	By arrangement	2	3·3
FINEDON	H. BURLAND, M.R.C.S. ...	Finedon ..	4,200	29·2	12·6	113·8	1·42	0·95	2·61	Yes	20			
ST. JAMES' (NORTHAMPTON) ...	J. M. BRYAN, M.R.C.S. ...	Northampton ...	6,000	33·3	13·1	155·0	1·0	2·16	3·5	**No**	70	By arrangement	1	1·4
KETTERING	J. W. DRYLAND, M.R.C.S. ...	Kettering ...	28,000	33·8	14·5	161·3	1·1	2·35	1·07	Yes	253	**Yes**	107	42·29
KINGSTHORPE	H. CROPLEY, F.R.C.S., D.P.H....	Northampton ...	12,745	34·4	14·4	184·5	0·86	1·8	2·19	Yes	191	Just completed.		
OUNDLE	E. SOMERSET, M.R.C.S. ...	Oundle ...	2,780	14·3	9·3	25·0	1·07	1·43	1·07	Yes	13			
RAUNDS	W. MACKENZIE, L.R.C.P. ...	Raunds ...	4,100	28·0	10·9	130·4	0·48	1·95	0·48	Yes	37			
ROTHWELL	J. MORE, M.D.	Rothwell ...	4,370	28·6	13·2	184·0	--	3·2	1·37	Yes	10			
RUSHDEN	C. R. OWEN, M.R.C.S. ...	Rushden ...	12,000	36·9	16 0	191·8	2·08	2·58	3·08	**No**	About 57	Tem. Small Pox Hospital		
WELLINGBOROUGH	W. W. CLARK, M.D... ...	Wellingborough .	18,600	26·9	11·7	135 4	0·91	1·29	1 29	Yes	312	**Yes**	34	10·08
TOTALS AND MEANS FOR	**COMBINED URBAN DISTRICTS**		**109,353**	**31·12**	**14·0**	**158·04**	**1·06**	**2·03**	**1·92**		**1,100**		**144**	**13·09**
RURAL :—														
BRACKLEY	G. N. STATHERS, M.R.C.S., D.P.H.	Brackley ...	7,780	26·6	16·0	106·2	0·64	1·15	0·64	Yes	18			
BRIXWORTH	J. R. LOWNDS, L.R.C.P. ...	Brixworth ...	12,220	23·3	14·6	108·7	0·49	1·47	1·71	Yes	55			
CRICK	G. WILSON, M.D., D.P.H. ...	Warwick ...	2,427	29·2	16·4	126·7	—	3·7	2·47	Yes	7			
DAVENTRY	A. R. DARLEY, M.D. ...	West Haddon ...	13,709	22·9	15·2	105·0	0·29	1·45	0 87	Yes	76	**Yes**		
EASTON-ON-THE-HILL ...	T. P. GREENWOOD, M.R.C.S. ...	Stamford ...	1,650	21·8	13·9	166 6	0·6	1·21		Yes	3	By arrangement	1	33·3
GRETTON	J. T. THOMAS, L.R.C.P., D.P.H.	Leicester ...	1,683	19·6	11·2	151·5	0·59	2·97	0·59	Yes	32	Yes; but Hosp. unfurnished		
HARDINGSTONE	G. H. PERCIVAL, M.B. ...	Northampton ...	8,420	24 2	14·2	98·0	1·78	1·54	0·23	Yes	25	**Yes**	16	64·0
KETTERING	J. W. DRYLAND, M.R.C.S. ...	Kettering ...	11,500	25·8	13 3	134·6	0·6	2·69	1·04	Yes	78	**Yes**	17	21·7
MIDDLETON CHENEY ...	E. FRANEY, M.R.C.S. ...	Banbury ...	2,620	26 7	13·3	100·0	—	1·14	0·76	Yes	3			
NORTHAMPTON	G. H. PERCIVAL, M.B. ..	Northampton ...	6,554	32·1	16 09	98·9	1·59	2·29	1·41	Yes	61	By arrangement	1	1·6
OUNDLE	C. N. ELLIOTT, M.B. ..	Oundle ...	7,805	18·5	13·9	103·4	0·89	1·79	0·38	Yes	78		1	1·28
OXENDON	T. A. DURRANT, M.R.C.S. ...	Market Harboro'.	4,627	20·5	11 8	115·7	0 64	1·08	0·86	Yes	18			
POTTERSPURY	T. S. MAGUIRE, M.D. ...	Stony Stratford.	5,880	24·3	14·6	160·8	1·19	2·38	1·19	Yes	90			
THRAPSTON	C. N. ELLIOTT, M.B. ...	Oundle ...	10,514	28·3	14·1	90·6	1·14	2·47	0·95	Yes	59			
TOWCESTER	A. P. KINGCOMBE, M.R.C.S. ...	Towcester ...	11,523	25·9	14·7	117·0	0·78	2·51	1·3	Yes	118			
WELLINGBOROUGH	F. H. MORRIS, M.D.... ...	Wellingborough .	16,637	33·8	11·8	85·1	0·9	2·22	2·46	Yes	161			
TOTALS AND MEANS FOR	**COMBINED RURAL DISTRICTS**		**125,549**	**25·83**	**14·67**	**107·92**	**1·04**	**1 99**	**1·18**		**882**		**36**	**4·08**
TOTALS AND MEANS FOR	**ADMINISTRATIVE COUNTY**		**234,902**	**28·29**	**14·36**	**133·59**	**1·05**	**2·0**	**1·53**		**1,982**		**180**	**9·08**

"Districts" printed in heavy type are those in which there is no Official Notification of Infectious Disease.

Table D.

DEATHS during the year 1898, in Public Institutions in the Administrative County of Northampton, classified according to **DISEASES, AGES,** and **LOCALITIES,** which have been taken into account in arriving at the Corrected Death-rates.

PUBLIC INSTITUTIONS.	DISTRICT.	Mortality from all Causes, at subjoined Ages.							Ages.	Mortality from subjoined Causes, distinguishing Deaths of Children under Five Years of Age.																			
		At all Ages.	Under 1 year.	1 and under 5	5 and under 15	15 and under 25	25 and under 65	65 and upwards		Small-pox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Fevers. Typhus.	Fevers. Enteric or Typhoid.	Fevers. Continued.	Fevers. Relapsing.	Fevers. Puerperal.	Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhœa and Dysentery.	Rheumatic Fever.	Influenza.	Phthisis.	Bronchitis, Pneumonia, & Pleurisy.	Heart Disease.	Injuries.	All other Diseases.	Total.
WORKHOUSES.																														
Brackley	Brackley Urban ...	15	1				3	11	Under 5																	1			1
									5 upwds.															1		2	2	9	14
Brixworth	Brixworth Rural ...	9						9	Under 5																	1		8	9
									5 upwds.																				
Daventry	Daventry Urban ...	12						12	Under 5																	3		7	12
									5 upwds.														1				1		
Hardingstone ..	Hardingstone Rural ...	5				1		4	Under 5																	2	2	1	5
									5 upwds.																				
Kettering	Kettering Urban ...	37	2	2			12	21	Under 5																	1		3	4
									5 upwds														1		4	6	4	18	33
Oundle	Oundle Urban .	12					3	9	Under 5																1	2	1	1	7	12
									5 upwds																				
Potterspury ...	Potterspury Rural ...	4						4	Under 5																				4	4
									5 upwds																				
Thrapston	Thrapston Rural ..	12					3	9	Under 5																	3	1		8	12
									5 upwds.																				
Towcester	Towcester Rural ..	8					1	7	Under 5																		1		7	8
									5 upwds.																				
Wellingborough ...	Wellingborough Urban	23	1		1		9	12	Under 5																				1	1
									5 upwds.																1	1	1	19	22
INFECTIOUS DISEASES HOSPITALS.																														
Kettering "Joint"	Kettering Urban ...	4			3		1		Under 5																					
									5 upwds.					4																4
Northampton Boro'	Kingsthorpe Urban ...	12		6	4	2			Under 5		5	1																		6
									5 upwds.		3			2															1	6
Wellingborough ...	Wellingborough Urban	2		1	1				Under 5		1																			1
									5 upwds.		1																			1
GENERAL HOSPITALS.																														
Brackley	Brackley Urban ..	3				1	2		Under 5																		1	1	1	3
									5 upwds.																					
Kettering	Kettering Urban ...	7		1		1	5		Under 5																	1				1
									5 upwds.																1		1	2	2	6
ASYLUM.																														
Berry Wood ...	Northampton Rural ...	98			2	8	48	40	Under 5																					
									5 upwds.																30	3	12		53	98
TOTALS... ..	.. ..	263	4	10	11	13	87	138	Under 5		6	1														3			4	14
									5 upwds.		4			6								2		1	37	23	26	5	145	249

SUMMARY OF REPORTS OF THE DISTRICT MEDICAL OFFICERS OF HEALTH.

Name of District.	Prominent Features of Report.
Brackley Borough.	(*a*) **No official Notification of Infectious Diseases.** (*b*) No Hospital for the Isolation of Infectious Diseases. (*c*) Exceptionally low general death-rate. (*d*) Action required in regard to the poorest cottages in the town. (*e*) Banbury Road Sewer to be extended to sewage farm instead of discharging into brook.
Daventry Borough.	(*a*) Sufficient use not made of the Hospital for the Isolation of Infectious Diseases. (*b*) Prevalence of Scarlet-Fever, Measles, and Whooping-Cough. (*c*) Improvement of the public water-supply is needed. (*d*) Sewerage of the Drayton portion of the Borough requires attention.
Higham Ferrers Borough.	(*a*) No Hospital for the Isolation of Infectious Diseases. (*b*) Phthisis mortality rate remains stationary. (*c*) Whooping-Cough prevalent during early part of the year

Name of District.	Prominent Features of Report.
	(*d*) A good public water-supply is required. (*e*) Many of the older cottages are unsatisfactory. (*f*) Good progress being made with the sewage works.
Desborough Urban.	(*a*) No Hospital for the Isolation of Infectious Diseases. (*b*) Serious outbreak of Enteric Fever, mainly due to impure drinking water. (*c*) Construction of public water-works has been commenced. (*d*) More cottages required in the district. (*e*) Recommendation that all water closets should have separate flushing cisterns.
Far Cotton Urban.	(*a*) Scarlet-fever of a mild type very prevalent. (*b*) A more complete system of ventilation for the sewers is required.
Finedon Urban.	(*a*) No Hospital for the Isolation of Infectious Diseases. (*b*) A few cases only of Measles. (*c*) Public water supply is required. (*d*) Sewerage scheme completed: many connections yet to be made.

Name of District.	Prominent Features of Report.
St. James' (N'ton) Urban.	(*a*) **No official Notification of Infectious Diseases.** (*b*) Epidemic of Scarlet-fever of a mild type. (*c*) Prevalence of Measles. (*d*) Recommendation that every water closet should have a separate flushing cistern.
Kettering Urban.	(*a*) Great usefulness of the Hospital for the Isolation of Infectious Diseases. (*b*) Scarlet-fever very prevalent during the whole year. (*c*) Considerable prevalence of Measles. (*d*) Water-works are being transferred from the Shareholders to the Urban District Council. (*e*) Many closets still without flushing cisterns. (*f*) Important progress of Sewerage and Sewage-works.
Kingsthorpe Urban.	(*a*) Completion of Hospital for the Isolation of Infectious Diseases. (*b*) Scarlet-fever very prevalent during latter half of the year, but of a very mild character. (*c*) Recommendation that every water closet should have a separate flushing cistern.

Name of District.	Prominent Features of Report.
	(*d*) Recommendation that the erection of ventilating shafts to the drains should be more rigidly enforced.
Oundle Urban.	(*a*) Adoption of the Infectious Disease Notification Act. (*b*) No Hospital for the Isolation of Infectious Diseases. (*c*) Slight prevalence of Scarlet-Fever.
Raunds Urban.	(*a*) No Hospital for the Isolation of Infectious Diseases. (*b*) Public water-supply is required. (*c*) Improvements in system of scavenging required. (*d*) Improvements made to the Brook at Raunds. (*e*) Adoption of The Public Health Acts Amendment Act, 1890, Part III.
Rothwell Urban.	(*a*) No Hospital for the Isolation of Infectious Diseases. (*b*) Time required to perfect system of drainage. (*c*) Extension of Sewage Works in hand to prevent pollution of brook by effluents from the Sewage Farm.
Rushden Urban.	(*a*) No official Notification of Infectious Diseases.

Name of District.	Prominent Features of Report.
	(*b*) Hospital provision only consists of a temporary Small-pox Hospital. (*c*) Outbreak of Enteric Fever due to impure drinking water. (*d*) Prevalence of Measles. (*e*) Whooping-cough prevalent in January. (*f*) Extension of public water-supply is required. (*g*) 200 new houses built during the year.
Wellingborough Urban.	(*a*) Epidemic of Scarlet-fever of a mild type. (*b*) Infectious Diseases Hospital proved very useful.
Brackley Rural.	(*a*) No Hospital for the Isolation of Infectious Diseases. (*b*) Improvement of the public well at Helmdon has been again adjourned. (*c*) Sewerage work carried on at Crowfield, Eydon, and Helmdon. Sewerage at Syresham still under discussion.
Brixworth Rural.	(*a*) Adoption of the Infectious Disease Notification Act. (*b*) No Hospital for the Isolation of Infectious Diseases. (*c*) Epidemic of Scarlet-fever at Spratton.

Name of District.	Prominent Features of Report.
	(*d*) Epidemic of Diphtheria at Guilsborough, and extension of the disease to the villages of Coton, Creaton, and Holdenby.
	(*e*) Epidemic of Measles at Scaldwell, and prevalent at Maidwell.
	(*f*) Filtration bed at Walgrave enlarged by an acre.
	(*g*) Pollution of brooks at Moulton and at Guilsborough Grange rectified.
Crick Rural.	(*a*) No Hospital for the Isolation of Infectious Diseases.
	(*b*) Sharp outbreak of Measles at Lilbourne.
Daventry Rural.	(*a*) Outbreak of Enteric Fever at Weedon due to impure drinking water.
	(*b*) Measles prevalent at Long Buckby, West Haddon, Staverton, Newnham, Norton, Weedon, Badby, and Welton.
	(*c*) Whooping-cough prevalent in Stowe-Nine-Churches.
	(*d*) Provision of public supply of water to Long Buckby is in progress.
	(*e*) Sewerage work recommended at Staverton and Woodford-cum-Membris.

Name of District.	Prominent Features of Report.
	(*f*) Pollution of stream by West Haddon Manor House abated.
	(*g*) Pollution of streams at Long Buckby by sewage.
	(*h*) Desire for Model Bye-laws for the District.
Easton-on-the-Hill Rural.	(*a*) Warning given as to the protection of 'Dip' wells from pollution.
	(*b*) Recommendation that Privy-vaults should be done away with, and earth-closets substituted.
Gretton Rural.	(*a*) Hospital provision consists in a right to the usage of an unfurnished hospital belonging to the Uppingham District.
	(*b*) Prevalence of Scarlet-fever of a mild type in the village of Gretton.
	(*c*) Measles very prevalent.
	(*d*) Warning given as to the protection of 'Dip' wells from pollution.
Hardingstone Rural.	(*a*) Heavy Cancer-mortality in the Brafield and Wootton divisions of the district.
	(*b*) Good account of the new water-works (by wind power) at Hardingstone village. Improved supplies needed at Denton and Wootton.

Name of District.	Prominent Features of Report.
	(*c*) Ventilation and surroundings of Yardley Hastings schools said to be unsatisfactory.
	(*d*) Sewerage scheme sanctioned for Roade, and in hand for Brafield and Yardley Hastings. Sewage farm at Hardingstone not satisfactory, and scheme for cottages near Cooknoe required.
Kettering Rural.	(*a*) Great usefulness of the Hospital for the Isolation of Infectious Diseases.
	(*b*) Slight increase of population in villages of Broughton and Burton Latimer.
	(*c*) Scarlet-fever prevalence in the villages of Cottingham, Burton Latimer, and Weekley.
	(*d*) Outbreak of Enteric Fever at Corby due to local insanitary conditions.
	(*e*) Measles very prevalent at Cottingham, Corby, and Middleton.
	(*f*) Drainage at Burton, Warkton, Harrington, and Geddington. Sewage scheme for Broughton under discussion.
	(*g*) Bye-laws in force for the villages of Burton Latimer and Broughton with consequent improvement in buildings.

Name of District.	Prominent Features of Report.
Middleton Cheney Rural.	(*a*) No Hospital for the Isolation of Infectious Diseases. (*b*) Attention being paid to drainage in connection with cottages. (*c*) Sewers repaired at Middleton Cheney, Overthorpe, and Chipping Warden.
Northampton Rural.	(*a*) Increase of population in the village of Abington adjoining the County Borough of Northampton. (*b*) General death-rate rather high. (*c*) Scarlet-fever prevalence in the village of Duston. (*d*) Epidemic of Diphtheria at Harpole. (*e*) Works of water supply at Kislingbury publicly opened. (*f*) Main sewer required for Duston, and scheme for sewage treatment at Weston Favell.
Oundle Rural.	(*a*) No Hospital for the Isolation of Infectious Diseases. (*b*) Scarlet-fever prevalence at Warmington. (*c*) Measles prevalent at Bulwick and Blatherwick. (*d*) Public water-supply needed for Kingscliffe. (*e*) Proper drainage at Kingscliffe required, also at Polebrooke.

Name of District.	Prominent Features of Report.
Oxendon Rural.	(*a*) Adoption of Infectious Disease Notification Act. (*b*) No Hospital for the Isolation of Infectious Diseases. (*c*) Scarlet-fever prevalence at Wilbarston. (*d*) Measles prevalent in the District. (*e*) Warning as to the protection of wells in the District.
Potterspury Rural.	(*a*) No Hospital for the Isolation of Infectious Diseases. (*b*) Scarlet-fever prevalence, notably at Paulerspury. (*c*) Improvement required in the water supplies to the villages of Potterspury and Paulerspury. (*d*) Abatement of river pollution at Old Stratford in hand.
Thrapston Rural.	(*a*) No Hospital for the Isolation of Infectious Diseases. (*b*) Scarlet-fever prevalence in many of the villages (*c*) Diphtheria at Tichmarsh. (*d*) Measles prevalent at Woodford and Addington. (*e*) Public water supply to Thrapston still under consideration. (*f*) Public Scavenging recommended for Thrapston.

Name of District.	Prominent Features of Report.
	(*g*) Sewage Scheme for Thrapston not yet decided on. (*h*) Attention to the brooks at Ringstead and Stanwick is needed.
Towcester Rural.	(*a*) No Hospital for the Isolation of Infections Diseases. (*b*) Considerable Scarlet - fever prevalence in several villages. (*c*) Measles prevalent at Lichborough, Blakesley, and Greens Norton. (*d*) Whooping-cough prevalent in Pattishall and neighbourhood. (*e*) Water supplies of Towcester, Grimscote, Blakesley, and Gayton are under consideration. (*f*) Sewage Scheme for Towcester still unsatisfactory. (*g*) Recommendation for adoption of The Public Health Acts Amendment Act, 1890, Part III.
Wellingborough Rural.	(*a*) No Hospital for the Isolation of Infections Diseases. (*b*) Increase of population in the District. (*c*) Prevalence of Scarlet-fever in the District.

Name of District.	Prominent Features of Report.
	(*d*) Prevalence of Diphtheria at Earls Barton.
	(*e*) Water supply to Earls Barton inefficient. Water supply to Wilby still engaging the attention of the Parish Council.
	(*f*) Disposal of Sewage at Irthlingborough, Little Irchester, and Earls Barton still unsatisfactory.

Jos. Tebbutt, Printer, Swan Yard, Northampton.

Northamptonshire County Council.

REPORT

ON THE

Measures which should be taken to Prevent the Spread of Infectious Diseases,

BY

CHARLES E. PAGET,

County Medical Officer of Health.

NORTHAMPTON:

JOS. TEBBUTT, PRINTER, SWAN YARD, DRAPERY.

1899.

NORTHAMPTONSHIRE COUNTY COUNCIL.

REPORT

ON THE MEASURES WHICH SHOULD BE TAKEN TO PREVENT THE SPREAD OF INFECTIOUS DISEASES.

IN consequence of the resolution carried by the County Council at its Meeting on March 16th, 1899, on the motion of the Chairman, that the Public Health Committee be requested to consider what steps should be taken to prevent the spread of Epidemic Diseases, the Committee, in addition to other steps, deputed to a Sub-Committee the consideration of the question whether a Memorandum should not be prepared on a comprehensive scale as to the Measures which should be taken by District Councils towards the prevention of the spread of Infectious Diseases.

The Sub-Committee, having carefully considered this matter, decided that it was desirable that a Report on the subject should be drawn up by the County Medical Officer of Health for the information of the Council, and recommended that the same should be sent to the several District Councils of the Administrative County, and to the District Medical Officers of Health, in the same manner as copies of the Annual Report of the County Medical Officer of Health are at present distributed.

The following Report has, therefore, been prepared.

Epidemic Diseases.

In considering the measures which should be taken to prevent the danger of Epidemic Diseases, it is important to remember that these are of two kinds:—

I. The Measures which are advisable as a means of preparation against threatenings or attacks by Epidemic Disease, and

II. Those which are necessary, in the event of Epidemic Disease approaching or obtaining a foothold in any locality, against its spread.

Of the first class are (*a*) Hospitals for Isolating the Infectious sick,

(*b*) The education of the community as to the proper conduct of their modes of life and surroundings, and,

(*c*) In the single case of Small Pox, Vaccination and Re-vaccination.

In the second class are (*a*) Prompt warnings to a community of the advent of infectious illness, with information as to the best means to be taken to avoid its contagion, and

(*b*) The proper method of dealing with the disease in any household that may be attacked.

I.

It is hardly necessary to observe that the measures comprised in the first class are not less important than those of the second class. "Prevention is better than cure," and when the loss in time and money which illness occasions is considered apart altogether from the loss in health of others which mental anxiety inevitably gives rise to, it can hardly be contended that the want of recognition or practice of principles of hygiene is anything but a waste of valuable property.

We happily know that the contraction of some epidemic diseases, and the consequent mortality therefrom, has been already sensibly lessened by the exercise of sanitary knowledge and experience. We know, too, that some of these diseases may be not improperly regarded as "preventible diseases." It may indeed be too much to expect that, in our day, the risk of contracting some of the infectious diseases in certain early periods of life will be largely reduced; but nobody questions that the escape from infection is always a matter for congratulation, especially as, in the case of some fevers, complications are liable to remain after the acute illness has subsided. While, therefore, we may say that, by the exercise of precautionary or preventive measures, some of the infectious diseases may be avoided, we cannot escape them as yet altogether, and it is of the utmost importance that they should be controlled by every means in our power from obtaining a stronghold in the centre of any community.

Hospital Accommodation.

One of the most obvious ways of controlling the spread of infectious disease in a district is by providing some building wherein the sick may be separated from the healthy, and be specially and skilfully treated. The recognition of this fact is growing throughout the country, but it is as yet far from having been put into practice.

The most expensive manner of providing an isolation hospital is to put off action until the approach or arrival of some serious infectious disease in a district. The hospital is then built in a hurry, and urgency has to be paid for. Besides, for an isolation hospital to be of use in staying the spread of disease, it should be in readiness for use at any moment before the actual occurrence of cases of illness.

The importance of isolating first cases of infectious sickness so as to check the spread of infection cannot be over-rated, and the isolation requirements of a district must be carefully weighed before the lines of construction of an hospital are determined on.

It may, for example, be stated positively, that hospital accommodation for cases of infectious sickness is wanted more constantly, and in larger amount, for towns than for villages, and that no Urban District in this County is properly equipped for purposes of sanitary defence which has not either an efficient hospital of its own or an adequate arrangement with a neighbouring district for the isolation of its infectious cases. In towns, too, there is the greater probability of need for provision for the isolation at the same time of cases of two or more infectious diseases.

Again, while the number of cases for which permanent provision should be made depends on various considerations, of which inter-communication with populous places is not the least important. the hospital for large villages or groups of villages can hardly be of less extent than one for a single town; but the provision for a single village may often be supplied in an isolated but suitable cottage with from four to six rooms. The provision of a cottage for a single village is, however, a far less efficient and economical arrangement for the whole District of a Local Authority than a properly equipped central hospital, if there be good roads and means for the conveyance of the sick to hospital.

It may, however, be laid down as a rule that no hospital provision, which contemplates the supply of less than one bed per 1,000 of the population, will prove to be adequate to the requirements of a district. In some districts a larger amount is plainly necessary, in none is a less amount indicated.

The fact that in small towns and large villages of Administrative Counties the provision of hospital accommodation was to a large extent neglected, led to the passing of the Isolation Hospitals Act, 1893. The main effect of this Act was to give County Councils the power to provide, or cause to be provided, hospitals for the isolation of infectious cases. The Act is, therefore, a very important one, and its provisions need to be carefully borne in mind.

Provisions of the Isolation Hospitals Act, 1893.

Sec. 2. The Act does not apply to county boroughs in England and Wales, or to any non-county borough, without the consent of its council. In the case, however, of a borough the population of which is less than 10,000 persons, the Local Government Board may by order direct that the Act shall apply to such borough.

Sec. 3. Power is given to a County Council, on application being made to it, to provide or cause to be provided in any district a hospital for the reception of patients suffering from infectious diseases.

Sec. 4. This application may be made by any one or more of the local authorities within the Administrative County. It may also be made by any number of ratepayers not less than twenty-five, in any contributory place as defined by the Act.

Sec. 5. Such applications must be made by petition, and state the district for which the isolation hospital is required, and the reasons which the petitioners adduce for its establishment. The application must then be considered by the County Council, or Committee appointed for the purpose, and, if a *primâ facie* case is made out for a local enquiry, such enquiry as to the necessity for the establishment of an isolation hospital must be made by the County Council.

Sec. 6. On the other hand, instead of waiting for an application, the County Council may direct an enquiry to be made by the County Medical Officer of Health as to the necessity of an isolation hospital being established for the use of the inhabitants of any particular district in the County, and on his report may take all such proceedings as if a petition had been presented by a local authority.

Sec. 7. The local enquiry of the County Council must be made "by a committee consisting of such number of their "members, either with or without the addition of such "other persons, or in such other manner as the Council "think expedient."

Sec. 8. A "hospital district" under the Act must consist of one or more local areas. A local area, which has isolation hospital accommodation sufficient in the opinion of the County Council for the exigencies of that area, cannot be included in a hospital district without its assent. Any local authority, having jurisdiction within any part of the proposed hospital district, may appeal to the Local Government Board against the formation of the district or its inclusion in it, and the decision of the Board shall be conclusive.

Sec. 9. When a local enquiry has been held by the County Council, it must make an order, either dismissing the petition or constitnting a hospital district, and directing an hospital to be established: "Provided that the "County Council shall not take steps for the constitution "of a hospital district for one or more contributory "places forming a portion of a rural sanitary district "within the jurisdiction of the County Council, or for "one local area, unless the sanitary authority of such "place or places, or area, assent to the application, "or are proved to the satisfaction of the County "Council to be unable or unwilling to make suitable "hospital accommodation for such place, places, or "area."

Sec. 10. A "hospital district" having been constituted, the County Council must form a "hospital committee." This "may consist wholly of members of the County "Council, or partly of members of the County Council "and partly of representatives of the local area or areas "in the district, or wholly of such representatives."

The County Council is also given powers to "make "regulations for the election, rotation, and qualification, "and for all other matters relating to the constitution "of any such committee"; but, if no contribution is paid by the County Council to the funds of the hospital, the committee, unless the authorities interested otherwise desire, must consist wholly of local members. Moreover, if any local authority within the hospital district feels aggrieved at the constitution of the committee, it may appeal to the Local Government Board.

The hospital committee has such power of acquiring land, and of providing a hospital, by purchase or otherwise, as the County Council may delegate to them. The County Council retains the power of inspecting such hospital, and of raising money by loan for the purpose of such hospital.

Sec. 13. Every isolation hospital must be provided with an ambulance or ambulances for the purpose of conveying patients to the hospital, and be, as far as practicable, in connexion with the system of telegraphs.

Sec. 14. A hospital committee may, if it deems it necessary, provide extra accommodation "by hiring or otherwise "acquiring, any buildings, tents, wooden houses, or "other places for the reception of patients;" it may also, in addition to, or instead of a central hospital, establish hospitals in cottages or small buildings, and may make temporary accommodation before establishing a permanent hospital.

Sec. 15. "Subject to any regulations made by the County Council, "a hospital committee may make arrangements for the "training of nurses for attendanee on patients suffering "from any infectious disease, either inside or outside "the hospital, and may charge for the attendance of

"such nurses outside the hospital; and the expenses of "any such nurses, after deducting any profits derived "from their services, shall be establishment expenses of "the hospital, within the meaning of this Act."

Sec. 16. The charge for patients shall be "such sum as the "hospital committee may think sufficient to defray the "expenses in this Act defined as patients' expenses."

Sec. 17. The Hospital Expenses are to be classified as

(*a*) Structural expenses,
(*b*) Establishment expenses, and
(*c*) Patients' expenses,
and these are specifically defined.

Sec. 18. All expenses, except patients' expenses and special patients' expenses, are to be defrayed out of the local rate when the hospital district consists of a single local area, and, in the case of a joint district, out of a common fund to which each local authority shall contribute in such proportions as the County Council shall determine.

Sec. 19. A patients' expenses are recoverable, in respect of paupers, from the guardians from the union from which he was sent, of a non-pauper patient from the local authority of the local area from which he was sent, and of a special patient from the estate of the patient.

Sec. 21. "A County Council may, where they deem it expedient "so to do for the benefit of the county, contribute out "of the county rate a capital or annual sum towards "the structural and the establishment expenses of an "isolation hospital, or to either class of such expenses."

This Section does not apply to hospitals built otherwise than under the Isolation Hospitals Act, 1893.

Sec. 22. Power is given to a County Council to borrow money for the purposes of the Act on the security of the county rate, and

Sec. 23. Treatment in a hospital established under the Act does not entail on any person any disqualification or any loss of franchise or other right or privilege.

Now, with regard to the County of Northampton, there are, at the present time, 14 Urban Districts and 16 Rural Districts. Of the Urban Districts, 3 are non-county boroughs with less than 10,000 of population, namely, Brackley, Daventry, and Higham Ferrers. The consent of these boroughs to the operation of the Act is necessary, or the Local Government Board may by order direct that the Act shall apply to each or all of them. In only one of the three boroughs—Daventry—is there any sort of hospital accommodation provided. Of the remaining eleven Urban Districts, there are four only—Kettering, Kingsthorpe, Rushden, and Wellingborough,—which have hospitals, and two —Far Cotton and St. James' (N'ton.)—which have any sort of arrangement for the isolation of their cases with neighbouring local authorities. The hospital at Rushden is only a temporary one for small-pox cases. Thus, among the Urban Districts, there are two boroughs and five other Urban Districts without any provision of or arrangement for hospital accommodation whatever, and their total estimated population amounts to 23,300 persons, or, with Rushden, to 35,300 persons. These figures do not, however, probably represent the total population inadequately provided for, as the Medical Officer of Health for the St. James' (N'ton.) District says that a hospital is needed for that place, and there is no *fixed* arrangement for the isolation of cases from Far Cotton. Were these two districts added to the others, the inefficiently provided for population would exceed 45,000 persons.

With respect to the Rural Districts, four—Daventry, Gretton, Hardingstone, and Kettering—have hospitals, those of Daventry and Kettering being jointly with the Urban Districts bearing the same names, and Gretton having a right to the hospital at Uppingham.

Patients, too, from the Easton-on-the-Hill District are received in the fever wards of the Stamford Infirmary, and the Northampton District has an arrangement, only to a small extent made use of, with the Hardingstone District. There are thus ten Rural Districts without any sort of provision for the accommodation of infectious cases, or, more properly, eleven districts, as the Uppingham Hospital has never been furnished for the reception of patients. The total estimated population of these ten districts is 82,000 persons, or, with the Gretton and Northampton Districts, as much as 90,000 persons.

Thus, in round numbers, on the basis of no proper provision whatever for immediate isolation of infectious cases, there is an estimated population in this County of about 135,000 persons to be provided for. This means a necessity for an increase of not less than 135 beds in suitable hospitals.

But, unfortunately, the provision which does exist cannot be regarded as wholly adequate. A reference to the accompanying tabulated return will show how marked are the differences in the suitability of the accommodation provided, and these differences were manifestly apparent to the Sub-Committee of the Public Health Committee deputed to inspect them.

Taking them in the order in which they are referred to on the return, it must be admitted that the hospital for the Daventry Urban and Rural Districts is of the poorest and most crude character. It is not large enough for the two districts, and, being built of wood, is in want of many more repairs at all times than a more substantially built hospital would be. It appears to be seldom used, and its appearance is not inviting. Had it been built and conducted on the principles of the Joint-Hospital at Kettering, its history would probably have been the reverse of what it is to-day. It certainly ought to be done away with as speedily as possible, and replaced by a structure to which patients would be willing to go.

The Joint-Hospital at Kettering for the Urban and Rural Districts of that name is as admirable a specimen of what such a hospital can be as may be found anywhere. It is an example of what two adjoining districts can do in the way of hospital accommodation without it being necessary to put the Isolation Hospitals Act, 1893, into operation, and it reflects the highest credit on the two districts and their Medical Officer of Health. The popularity of the hospital, with its prettily and conveniently laid out grounds, is manifested by the readiness with which patients seek admission, and its utility is so marked that the question of its enlargement must soon occupy the attention of the two District Councils. In this connection it may be well to quote the following extract from the last Annual Report of the Medical Officer of Health for the Rural District:—"Free use has been "made of the Joint Isolation Hospital, and I think the result has "been more markedly beneficial in the Rural than in the Urban "District; indeed, in every instance the use of it by persons "from the Rural District seems to have been the means of greatly "assisting in arresting the spread of disease, while the patients "from crowded houses have had a much better chance of "recovery." With the rapid growth of the Kettering Urban District, an increase of accommodation seems to be called for.

It is a pleasure, too, to speak in high terms of the new hospital for the Kingsthorpe Urban District. This appears to have been planned and built on the latest and most approved principles, and it can hardly fail to win favour from the rate-payers of the district. The hospital has only been completed this year, but it affords an example to other districts which they ought not to be slow to follow.

The small-pox hospital of wood and iron of the Rushden Urban District is well placed, but is, in the opinion of the Medical Officer of Health, not large enough to cope with an epidemic of small-pox. This fact is self-evident, but there is room for extension. In the meantime, there is no provision for other cases of infectious sickness in the district.

The hospital of the Wellingborough Urban District has many merits, which can be enhanced both by alteration of some of its features and by its being extended so as to accommodate both sexes of the infectious sick of two diseases. The hospital does not seem to be used on anything like the scale as the one at Kettering, and there appears to be here an admirable opportunity for repeating the success of the two Kettering Districts by the two Wellingborough Districts. If these two districts would similarly agree to the formation of a Joint Committee of Management, extend the hospital accommodation, and provide an efficient and well-trained nursing staff, the utility of the hospital would be very greatly increased, and an economical arrangement be arrived at. At present, the Wellingborough Rural District is without the means of isolating patients in hospital.

Of the fever-wards at the Stamford Infirmary, it is hardly possible to speak too highly. By a wise and generous policy, the authorities of the Infirmary have been led to open these wards to surrounding districts on definite annual payments towards the funds of the Infirmary. It is not too much to say that the districts thus fortunately placed are excellently provided for, and the small district of Easton-on-the-hill has benefitted considerably from the arrangement.

The small Rural District of Gretton appears to have rights of isolation in a small iron and wood hospital in the Uppingham Union; but, as this has never been furnished, it is, in the words of the late Medical Officer of Health, "at present absolutely "useless."

A few cases of Scarlet Fever from Uppingham went into this hospital in August of this year, taking their own beds and bedding with them.

There is no disinfecting apparatus at the hospital, or drainage, or wash-house. The place is little more than a shelter.

SUMMARY OF RETURNS BY DISTRICT MEDICAL OFFICERS OF HEALTH AS TO INFECTIOUS DISEASES HOSPITALS IN THE COUNTY OF NORTHAMPTON, 1899.

District.	Population, 1891.	Estimated Population, 1898.	Hospital.	Arrangement with any Hospital for isolation of cases.	Arrangements in respect of a Joint Hospital for two or more Districts.	Date of erection of Hospital.	Permanent or Temporary (Stone, Brick, Iron, or Wood).	Present state of Repair.	Area of Site. In Acres.	Distance in yards from nearest House.	Distance in yards from nearest Road.	Diseases admitted.
BRACKLEY BOROUGH	2,591	2,700	No.	No.								
DAVENTRY BOROUGH	3,939	3,939	Yes, with Daventry Rural District Council.		Hospital under management of Borough Council. The District Council pay 2/3 cost of maintenance and Caretaker's Salary including an annual sum of £15 interest on the capital sum expended by the Town Council in building the Hospital. Each Authority pays for maintenance and nursing of their respective patients, &c.	About six years ago.	P. Wood.	Moderate.	About 3.	100	150	All under Notification Act; but only one kind at a time.
HIGHAM FERRERS BOROUGH	1,810	2,100	No.	No.								
DESBOROUGH URBAN	2,872	3,651	No.	No.								
FAR COTTON	2,182	4,265	No.	The Hardingstone Rural Council take our patients (if they have room) at £1 5s. per week into their Hospital; but there is no fixed arrangement.								
FINEDON	3,197	4,250	No.	No.								
ST. JAMES' (N'TON)	1,159	6,000	No.	Yes, with Northampton Corporation at £2 2s. weekly per case.								
KETTERING	19,153	28,000	Yes, in part only with the Rural District.		Joint Hospital Board composed of 4 Urban Councillors and three Rural Councillors. Expenses are divided as equally as possible between the two Authorities, according to population and the number of patients accommodated.	Older building in 1886. New building in 1897.	P. Brick.	Good.	3 to 4	400	52	Small Pox, Scarlet Fever, Diphtheria, Enteric Fever, and Measles occasionally.
KINGSTHORPE	5,591	12,745	Yes.			1898–99.	P. Brick.	Perfect.	1	155	106	Scarlet Fever, Enteric Fever, and Diphtheria probably will be admitted.
OUNDLE	2,800	2,800	No.	No.								
RAUNDS	3,055	3,700	No.	No.								
ROTHWELL	3,378	4,370	No.									
RUSHDEN	7,115	12,000	Yes.			1893.	T. Iron.	Good.	About 2.	¼ mile	30	Small Pox.
WELLINGBOROUGH	15,068	19,000	Yes.			1890.	P. Brick.	Good.	About 1, enclosed in several acres of ground.	150	200	All Zymotic diseases.
BRACKLEY RURAL	7,774	7,779	No.	No.								
BRIXWORTH	12,186	12,200	No.	No.								
CRICK	2,427	2,127	No.	No.								
DAVENTRY	13,700	13,703	Yes, with Daventry Borough; for particulars, see return above. Also has a Hospital tent.									
EASTON-ON-THE-HILL	1,635	1,635	No.	A standing arrangement with Stamford Infirmary to take all cases of Typhoid, Scarlet-fever, or Diphtheria for a fixed annual payment. The Infirmary is governed by a Board elected from subscribers.								Scarlet Fever, Enteric Fever, and Diphtheria.
GRETTON	1,701	[illegible]	Yes, and No.	No.	The building was bought and erected some years ago by the Uppingham Guardians, and as Gretton was and is part of the Uppingham Union, the Gretton Council has a share in it. The building has never been furnished, or used.	1892.	P. Iron and Wood.	Good.	5	170	150	Only one disease could be treated.
HARDINGSTONE	8,121	8,121	Yes.			1891.	P. Iron.	Good.	2	½ mile at least.	45	Scarlet Fever mostly. Enteric Fever has been.
KETTERING	10,000	11,500	Yes, with Kettering Urban District; for particulars, see return above.									
MIDDLETON CHENEY	2,600	2,620	No.	No.								
NORTHAMPTON	6,149	6,551	No.	Yes, patients taken at fixed rate into Hardingstone Hospital.								
OUNDLE	7,906	7,805	No.	No provision whatever for Infectious Illness.								
OXENDON	4,731	4,927	No.	No.								
POTTERSPURY	5,930	5,880	No.	No.								
THRAPSTON	10,157	10,511	No.	No accommodation whatever for Infectious Disease.								
TOWCESTER	11,360	11,522	No.	No.								
WELLINGBOROUGH	15,773	16,637	No.	No.								

District.	Buildings showing: No. with Wards.	Wards in each.	Beds in Wards.	Mean cubic space per patient, in feet.	Mean floor space per patient, in feet.	Ambulance.	Disinfecting Apparatus; Kind and maker.	Means for removing infected clothing for disinfection.	Mortuary.	Laundry.	Arrangements for the Ventilation of the Wards.
DAVENTRY BOROUGH	1	2	Total of 6	3,276 in each ward.	262 in each Ward.	Yes; horse is hired as required.	None. Disinfection done by fumigation and washing.	Only Ambulance.	Yes.	Copper out of doors and small wash-house.	One outlet opening (11t. by 4in.) near the roof at the end of each ward; optional whether open or shut.
ST. JAMES' (N'TON)						No.	No.	No.			
KETTERING	1 1	4 2	Total of 20 Total of 12	In two, 1,203 In two, 1,404 Over 2,000.	In two, 92 In two, 108 156.	2 kept; 1 with 2 beds, 1 with 1 bed. The man who conveys provisions to the Hospitals twice daily, uses his horse for the Ambulances.	Manlove, Alliott and Co.'s High Pressure Steam Disinfector.	An open cart is used for this purpose.	Yes.	Yes: Wash-house, Ironing-room, and Drying-room.	Sash windows (double hung) with opening fan-light over. Gratings near floor. Old Building has upcast shafts through roof in addition.
KINGSTHORPE	2	2	Total of 12	2,028	156	Proposed to keep an ambulance and hire a horse as required.	Manlove, Alliott and Co.'s. Can be used for Current or High Pressure Steam.	Not at present.	Yes.	Yes: Wash-house, Ironing-room, and Drying-room.	Fresh air inlets about 12 inches above floor level; foul air exits through ventilators in ceiling.
RUSHDEN	1	2	Total of 4	Total = 5,200.		Yes.	No.	No.	No.	No.	Windows.
WELLINGBOROUGH	1	2	Total of 12	Totals In one, 8,953 In one, 6,013		Carriage and horse.	Detached brick chamber: Sulphur.	No.	Yes.	Yes.	Good.
DAVENTRY (Rural)	1 Tent for 14.										
EASTON-ON-THE-HILL	3	2	Total of 30			Yes at Infirmary. Horse hired by the District Council.	Disinfecting Stove at Infirmary—Dry Heat.	Only ambulance.			
GRETTON	1	2	Total of 6	1,092	80	No ambulance or other arrangements.	No apparatus of any kind.	None removed.	No.	No.	Ridge in roof and windows.
HARDINGSTONE	1	3	Total of 15	1,254	78	Yes, horse hired when wanted.	Fumigation.	Only ambulance.	Yes.	Yes.	Windows, and Valves in roof opening inwards.

District.	Arrangements for the Warming of the Wards.	Drainage of the Hospital, and means for excrement disposal.	Water Supply.	Caretakers and Nursing Staff.	Medical attendance.	Charge for Maintenance of Patients.	Rate of isolation to cases notified.	Communication with Hospital, and means for communicating with patients' friends.	Additional Remarks as to utility of Hospital, suggested improvement, and the requirements of the District now, or prospectively, in respect of hospital accommodation.	Supplementary Notes by the inspecting Sub-Committee of the Public Health Committee.
BRACKLEY BOROUGH									An Isolation Hospital is required.	
DAVENTRY BOROUGH	By Stoves.	No drainage; earth closets.	Fetched or carted from Town, as the pump fails to draw water from well.	A man and wife.	Paupers by the District Medical Officer. Private patients by own Medical Attendant.	In some cases the Guardians have tried to recover part of the cost.	For past 3 years no cases have been admitted.	No telephone. Telegraph office, 1 mile. No provision for communicating with friends of patients.	Of use as long as the Sanitary Authorities are opposed to [illegible] Hospital. The water supply requires improvement. The Hospital as used is not large enough for both Urban and Rural District.	Very poor [illegible]
ST. JAMES' (N'TON)									[illegible]ated.	
KETTERING	Older building; Open fire-places protected by guards. New building;—Central open-down draught stoves, supplemented by hot-water pipes.	Excrement disposal by earth closets. Slop and sink water carried by glazed earthenware pipes to irrigation beds on the premises.	From wells on the highest part of the premises, and a Water Tower.	1 Nurse-Matron, 2 Nurses, 1 Probationer. Man and wife as Gardener and Cook. 2 Ward and Laundry-maids, other assistance when required.	The Medical Officer of Health for both Districts is also Medical Officer to the Hospital; but any patient who chooses to pay for his own Doctor can be attended by him.	None whatever to any class, unless the patient wishes to have a Ward to himself, when he pays for an extra nurse.	In 1898: Scarlet fever 46·5 p.c.; Enteric fever 33·3 p.c.	No telephone. Telegraph office, 1 mile. The Matron telegraphs or writes to the friends.	Most useful. The accommodation at present is sufficient and exceedingly good. The population of the Urban District is increasing so rapidly that probably further accommodation will be required before many years, but there is plenty of room on the ground for more buildings.	Excellent [illegible]
KINGSTHORPE	Open stoves, fresh air being admitted from outside by shafts under floors.	Glazed socketted pipe drains, well trapped, discharging on to irrigation area.	From Northampton Borough Public Water Supply.	Nurse-Matron and Husband as caretakers. At present 1 Nurse.	Not yet settled.	Not decided.		No telephone. Telegraph office, 1 mile.	The Wards are so arranged as to admit of future extension.	[illegible]
OUNDLE									An Isolation Hospital is much needed, and if the Urban and Rural District Councils will combine to form a joint one as is at present proposed, it will be very advantageous to the district. There is no provision whatever in the event of an outbreak of Small-pox.	
RUSHDEN	Stoves.	Earth closets. Slops put on ground and dug in.	Well.	Caretaker and wife.	Medical Officer of Health.	No.		None.	In good condition; must be enlarged if Small-pox appear[illegible]	No room for extra nurse.
WELLINGBOROUGH	Good.	Earth closets. Drains to cess-pit in grounds.	Town's Water Supply.	Male and Female resident. Extra help hired if required.	Medical Officer of Health. Medical Men attend their own cases if wished.	No.		None. Messengers are employed for communicating with patients' friends.	Useful to isolate a few cases *during an Epidemic*. The Hospital has been very useful to isolate any imported cases of Zymotic Disease. Two or three times I was enabled to stop the spread of Small-pox in this way.	Good hospital, capable of improvement.
BRACKLEY RURAL									A Hospital or the joint use of one with neighbouring Districts is certainly a desideratum, and I have repeatedly advocated this view both in my Annual Reports and on every possible occasion.	
BRIXWORTH									I consider that a Hospital for Infectious Diseases would be of the utmost benefit, as it is the greatest difficulty to isolate cases, owing to want of room accommodation in many of the houses.	
DAVENTRY (Rural)									The utility of the present Hospital is [illegible]. It is insufficient if a large outbreak of Infectious Disease occurred.	Very poor [illegible]
EASTON-ON-THE-HILL					House Surgeon under direction of General Medical Staff.				Contract been in force for last two years, and has been of great benefit to District in the few cases that have needed it.	Excellent [illegible]
GRETTON	Tortoise stove in each room.	No drainage. Earth closets.	Pump in kitchen, from spring in field.	No arrangements made.	No arrangement.			Telegraph office, about a quarter of a mile.	At present absolutely useless. It should be furnished and equipped immediately. Hospital accommodation is very badly wanted throughout the Union. Scarlet Fever has been allowed to smoulder in one or other of the three Districts, for want of an Isolation Hospital and Disinfecting Apparatus.	Some cases of Scarlet Fever from [illegible] were [illegible] during August, 1899, taking their own beds and bedding.
HARDINGSTONE	Stoves.	Into covered tank away from main building. Earth closets.	Well.	Man and Wife; extra Nurse for severe cases or other help as required.	Medical Officer of Health.	Hull Club benefit from Members of Benefit Societies, and £1 5s. per week for patients from other Districts.	About 3 [illegible] of the cases.	No telephone. Telegraph office at Far Cotton about 3 miles away.	Very useful. Has hitherto proved quite large enough [illegible] population of district is decreasing.	Useful hospital.
KETTERING (Rural)										Excellent hospital.
NORTHAMPTON							A few cases only.			

The hospital of the Hardingstone Rural District, though only built of iron and wood, is excellent of its kind. It is believed that it is large enough for the purposes of the district, but it can accommodate only one disease at a time. It is, however, so placed that an additional, even if smaller, pavilion can easily be added, so that two diseases could be treated at the same time. The hospital, as it is, has proved very successful in isolating first cases of illness in villages and so preventing the spread of disease, and it is much to be regretted that there should be so many Rural Districts in the County which have not followed the sensible, if modest, example of the Hardingstone District.

There are details of management and of facilities of communication with the existing hospitals which are open to amendment, but they are not such as to come within the scope of the present report. But it may be taken as a fact that, the more liberal the management of each hospital, the more efficient it is, the more readily do patients enter it, and the more actually useful is it to the community.

Probably in the case of each of the hospitals to which reference has been made facilities would be given for their inspection by other District Councils in the County, and, seeing what examples are already set at Kettering, Kingsthorpe, and at Hardingstone, it is greatly to be hoped that other districts, which have made no sort of provision for the care of their ratepayers when stricken by infectious sickness, will proceed without delay to take the matter into their most serious consideration, and give speedy practical effect to their deliberations. In the event of their not doing so, it seems manifest that the County Council should take action towards securing the provision of such hospitals as may be necessary.

Education of the Community as to mode of life and care of surroundings.

Not less important in the scheme of preparation against attacks by Infectious Diseases, than the provision of isolation hospitals, is the education of the public as to their powers of avoiding what have been well-called preventible diseases. All infectious sickness is not preventible, but the dangers of infection may be warded off in respect of most of them and the causes of some avoided altogether by the exercise of reasonable care.

For instance, if milk had always been boiled before being drunk many cases of scarlet-fever and enteric-fever would not have occurred, nor the seeds of tuberculous disease and consumption have been sown: similarly, many cases and deaths from enteric-fever would not have had to be recorded if all water coming from doubtful sources had been boiled before being drunk. The permission given to healthy children to mix with others only recently recovered from attacks of scarlet-fever, diphtheria, measles, and whooping cough, has frequently led to their likewise contracting such diseases, when by avoidance of such an obvious risk they might have escaped them, and in some instances have been saved their lives. These remarks may seem very common-place but they are none the less true, and it is to the neglect of the simple facts they recount that so much of the spread of illness is due.

It may well seem to be the business of every local authority to strive and impress on the population under their sanitary control the real advantage of observing simple rules of hygiene in the interest not merely of each individual, but also of his neighbour, and of the whole community of which all are but ordinary members. To this end, it may be advantageous to issue placards, or cards, or leaflets from time to time reminding occupiers of property of the manner in which they should guard against harmful surroundings, and such advice should be issued irrespectively of more imperative recommendations, which may be necessary in the event of infectious disease having made its appearance in a locality.

Such advisory directions ought to call attention to the following general matters, in addition to others which local circumstances may suggest :—

1. Nuisances arising from any organic accumulation, bad smells, or soakage of liquid refuse, should be promptly abated at all times, and precautions should be taken to prevent their recurrence.

2. Regular and systematic examination should be made as to the proper and efficient working of all house drains and sewers, and any defects remedied. In Rural Districts, also, ditches and ponds should be kept free from nuisance and foul deposit.

3. Inasmuch as efficient and systematic scavenging is at all times necessary for the sanitary repute of a district, it is most important that all arrangements made by a local authority for its conduct should be loyally supported by the inhabitants.

4. Every care should be taken to guard against contamination of the water supply. Local wells and springs should be most carefully protected from pollution by animal or vegetable refuse, from the escape of the contents of sewers, drains, cess-pools, or foul ditches, and from surface washings from the ground around them.

   Water which is open to suspicion should only be drunk when it has been well boiled, and not kept longer than 24 hours in a covered vessel after having been boiled.

5. Inasmuch as the source of milk supplies is but rarely known to the consumer, or the condition of the dairies, the purity of the water used in them, the health of the persons employed, or the health of the cows supplying the milk, it is most desirable that all milk should be boiled by the consumer before being used.

6. Premises should not be allowed to become unclean, especially cottages where there is a full complement of inmates; they should be kept properly washed, and, where necessary, lime-washed. Lime-washing should be done at least twice a year in the Spring and Autumn.

7. Great care should be taken to avoid over-crowding of persons in dwellings. All windows of dwellings should be made to open freely so as to secure free ventilation, and chimneys should be left open.

8. The cleanliest domestic habits should be practised, and excess of all kinds avoided.

It must, however, be pointed out that, in the issue of any directions or recommendations of such a nature, it is desired that they may receive more than passing attention. When they are merely printed sheets of paper and distributed from house to house they soon get mislaid and lost, and it is better, therefore, to have them printed on a card, which should be furnished with an eyelet hole, so that, in cottages particularly, this may be hung from a nail on the wall, and, by its constant presence, remind the inmates of the rules they are asked to follow. It is of such importance that people should, as far as possible, be informed of the real precautions they may themselves take against the contraction of disease, that simple details such as that of putting the information in a more lasting form can hardly be regarded as insignificant.

Small Pox, Vaccination, and Re-Vaccination.

In the scheme of Infectious Disease Prevention, Small Pox and Vaccination hold a different position to that of the other diseases more commonly spoken of as the epidemic diseases.

It is much to be regretted that the subject is not a popular one in all parts of the County of Northampton; but it is none the less one which must needs receive attention.

It may appear to some an anomaly that local sanitary authorities are charged with the duty of isolating those sick of small-pox while the Poor Law Guardians have the conduct of the means for preventing the occurrence of the disease. But this fact does not deprive local sanitary authorities of the right to urge on the members of a community the desirability of their acquiring safety from the disease by vaccination and re-vaccination in their own individual interests or as members of the community, either in the direction of personal freedom from the disease or in economy from saving the necessity of additional hospital accommodation for small-pox patients.

Vaccination and Re-vaccination very commonly cause discomfort, and sometimes some feeling of illness during a few days, but they do not cause loss of life when sound lymph is used and proper care is taken of the vaccine vesicles, nor do they carry with them facial disfigurement or loss of sight or other permanent damage, as small-pox frequently does. The prejudice against vaccination and re-vaccination has arisen from several causes, and it is much to be hoped that the effect of the Vaccination Act of 1898, in providing for domiciliary vaccination and the provision of a sound and pure lymph, will be in the direction of increased vaccination and re-vaccination, and a saving in the necessity for providing hospital accommodation for those who neglect these means of safety.

With these aims in view, it can hardly be contended that the duties of a local sanitary authority would conflict with those of the Poor Law Guardians by the periodical issue to every house of some such information as is contained in the following memorandum :—

SMALL POX AND VACCINATION.

1. Small Pox is a very fatal, disfiguring, and infectious disease.

2. Vaccination, and Re-Vaccination, from time to time, are the only certain means for securing safety from an attack of Small Pox.

3. The protection afforded by Vaccination wears out in time and should be renewed by Re-Vaccination. All children, who have been vaccinated when infants, should be re-vaccinated when they leave school.

4. The Government now provides calf-lymph for the purpose of Vaccination.

5. By the use of calf-lymph the fear that other diseases may be given by Vaccination is groundless.

6. People not vaccinated as children and re-vaccinated at the end of school life will find a large number of desirable and well paid employments closed to them. Those who know the risk of contracting Small Pox which unvaccinated people run will refuse to employ them, and they will have a poor chance in competition with those who are protected by Vaccination and Re-Vaccination. Postmen, Policemen, Soldiers, Sailors, and Nurses are usually all re-vaccinated. They would not be employed if they were not in this way made secure against Small Pox. Many Insurance Companies also will only insure Vaccinated persons.

7. The immediate isolation of every case of Small Pox as soon as it is recognised is an important help in preventing an epidemic. But cases of Small Pox are often not recognised at once, and when they are surrounded by unvaccinated people the infection will have been already received by some of them before the nature of the illness is known.

8. Vaccination done later than two days after infection has been received will not protect from Small Pox ; but when done on the third day after infection has been received it may modify an attack of Small Pox.

9. One vaccination mark indicates much less protection against Small Pox than three or four marks do, and a large mark is better than a small one. Where one place only has taken, the child should be re-vaccinated when 3 or 4 years old and again on leaving school.

10. The greatest care should be taken not to remove the scab from vaccination spots, and not to put anything to the spots. If the arm is sore enough to make the child cross, it should be kept under medical attendance until quite well.

11. Most of the cases of serious inflammation of the arm are caused by the little wounds being fouled by something from outside the body, during the second week after vaccination when the scabs are apt to come off.

12. An unvaccinated person is a danger, not only to himself, but to his neighbours.

II.

In respect of the measures which should be taken to warn a community of the likelihood of its being invaded by one of the infectious diseases, it may be pointed out that a scheme has been instituted in the County for informing every Medical Officer of Health having jurisdiction within it of the number of cases of infectious diseases notified monthly in each of the towns or villages of Northamptonshire. This information has already served the purpose of warning Medical Officers of Health, and putting them on their guard against the spread of disease from one district to another; its continuance is, therefore, looked forward to with satisfaction.

This plan of inter-notification is at any rate a reasonable basis on which to make it desirable to issue warnings of the liability of a district to invasion by one of the specific infectious diseases.

It is satisfactory to note that in several of the districts in the County it has been customary, as occasion seemed to require it, to issue notices giving information as to the best means to be adopted for preventing the spread of infectious diseases. Some of these have been of a rather general nature, others of more specific kind. It is well to bear in mind that the one ought not

to supplant the other; but while the former is perhaps more suitable for public notices or placards, the latter is most required for more careful study in the household, and should be distributed from house to house. It is obvious that, where there is an absence of available means for isolation of the infectious sick in hospital, it is essential that the most precise instructions should be officially furnished to each household in which an infectious case has to be isolated. It may be thought convenient to convey both general and specific information on one notice; but, in that case, if it be contained in large placards for public notice, it ought to be issued also on smaller cards for house-to-house distribution as well.

It is only in such ways that the general public can be instructed as to the part they ought to play in dealing with infectious disease in their midst.

It may be contended that there is hardly necessity for so much elaboration of detail in regard to such notices; but when the Clerk of one considerable Urban District writes that "no "such papers of any sort have been issued within my knowledge "for the past year or two, and I find none filed in this office," that in another Urban District, "the Council has not issued any "papers of advice or pamphlets regarding Infectious Disease," and that the Medical Officers of Health of nearly half of the other Districts of the County write in a similar strain, it can hardly be said that the matter is not deserving of some further consideration in those districts at any rate.

Such notices as have already been issued in some Districts of the County relate to those epidemic diseases which are more commonly regarded with concern, as small-pox, scarlet-fever, diphtheria, enteric-fever, and cholera; but it must not be supposed that others, less seriously regarded, are not accountable for considerable mortalities which it is plainly the duty of local authorities to strive to prevent. Among such, measles, whooping-cough, and summer-diarrhœa, are diseases the spread of which may be

largely prevented by early precautions and vigilant care. Mortality from these diseases may be very greatly reduced by the observance of rules which parents frequently regard as unnecessary and needlessly troublesome; but, if they can be roused to a sense of duty in regard to them, lives that need not be lost might be saved and a higher sense of responsibility established.

Thus, for example, the following three notices might be taken as examples on which to base advice to persons at such times as measles, whooping-cough, or summer diarrhœa are threatening to prevail in a district, and, by drawing attention to the need of precautionary measures, may do something to check the mortality from them which is preventible to so great an extent.

Measles.

1. Measles is a very infectious disease, particularly in the stage before the rash appears. The early signs of the disease are coughing, sneezing, and redness of the eyes, and more or less feeling of illness.

2. A child at school with such signs of illness should be at once sent home, and kept there until well again.

3. It is very important that no member of a family, in which there are infants, should associate with others from a house where measles already exists.

4. Anyone attacked by measles should be placed in a separate room and kept warm. Other children in the house who have not been attacked by the disease, should not go to school for at least four weeks after the appearance of the eruption in the first case, and, if further cases occur in the house, not until four weeks after the eruption in the last case.

5. In view of the high mortality which frequently occurs from measles, parents are advised in every instance to seek medical advice in the earliest stages of the illness.

6. The chief danger of an attack of Measles arises from its complications,—Bronchitis and Pneumonia,—which are principally brought on by exposure to cold.

7. When the patient is well, the floors, walls, and furniture of the sick-room should be thoroughly scrubbed with a disinfectant. The windows should be kept wide open for the whole day.

Whooping Cough.

1. Whooping Cough is a very infectious disease, and is liable to prove a very fatal one in the absence of care of the patient.

2. At the commencement of the disease there may be only some feverish cold, but sometimes a frequent cough may usher in the disease. If Whooping Cough is known to be about, the case should be at once isolated as a precautionary measure.

3. A child at school, in whom there is reason to believe that Whooping Cough is showing itself, or who has the disease well marked, should be at once sent home, and the teachers should be on the outlook for fresh cases.

4. A child attacked by Whooping Cough should, if possible, be isolated in a room with a fire burning in the grate, and the window opened sufficiently to admit fresh air without allowing the room to become cold.

5. No other child in the house should be allowed to go to school until the distinctive "whoops" of the disease have ceased to occur.

6. When one child in a household has been attacked by Whooping Cough, any others should be watched, and any appearance of illness, especially with coughing, should be regarded as probably due to Whooping Cough, and the child treated in the same manner as the one first attacked.

7. When a child at any house is suffering from Whooping Cough, no child from another house should be admitted, nor should the sick child be allowed to play with other children until the "whoops" have ceased to occur.

8. The matter coughed or spat up by a child suffering from Whooping Cough must be regarded as infectious, and should be received on to pieces of rag and then burned. Discharges from the nostrils should be treated in the same manner.

9. In all cases of Whooping Cough, medical advice should be obtained until the patient is out of danger.

Summer Diarrhœa.

1. Children under 12 months of age, and especially those fed by hand, suffer most from this disease. This is chiefly due to errors in feeding.

2. All milk should be boiled before use, either separately or after being added to other food.

3. All milk boiled before use should be kept in a clean vessel covered over with a clean damp cloth.

4. Childrens' food should be freshly prepared.

5. All food should be kept in a clean, dry, and well-aired place.

6. No food which is tainted—especially meat and fish—or fruit which is unripe or rotten should be given to children. Food which has become tainted after cooking should be rejected.

7. Infants are very apt to suck their clothing, which should therefore be kept clean; care should be taken to prevent any dirty material getting into their mouths.

8. Over-crowding is a cause of Diarrhœa; it should, therefore, be avoided. During the warm season bedroom windows should be left open day and night. No chimney should ever be closed up, as an open chimney is an important aid to the ventilation of a room.

9. Closets, and all unpapered rooms should be lime-washed early in the summer, and wall papers should all be cleaned.

10. Drains should be flushed daily with a few buckets of clean water.

11. Damp foundations and dirt in or about a house are conducive to Summer Diarrhœa: Floors should, therefore, be kept clean, rooms kept free from dust and accumulations of filth removed from back premises.

12. If the cause of offensive smells cannot be found out and removed, the fact should be reported to the Sanitary Inspector or to the Medical Officer of Health for the District as soon as possible.

It should be borne in mind that, inasmuch as many of the infectious diseases most frequently attack children, and that the Public Elementary Schools are the places where children are more often brought into the closest contact with one another, much may be done to prevent the spread of infectious illness among the scholars by putting into the hands of their teachers clear information as to the symptoms of illness, and establishing a proper system of communication between the teachers and the local health officers.

Thus in the first instance, on the occurrence of illness a notice, such as the following might very properly be sent to the school teachers of a district :—

(Address).....

.....

(Date) 18

Dear Sir or Madam,

I beg to report that ..... (name of illness) is present at (House and Street), which is the residence of (name of pupil), one of the pupils in attendance at your School.

I have to suggest that, in the interest of the Public Health, you should not receive into your School any pupils from this house until it has been certified free from infection.

I am, Sir or Madam,
Yours faithfully,

.....

Then, when the affected house is again free from disease, a Post Card might be sent to the school teacher on the plan of which the following is a copy of that in use in the Kettering Urban District:—

CARD NO. 2.

42, Broadway,
KETTERING,

.....

Please note that the houses in which the under-named children reside have now been disinfected.

J. BARRITT,
Sanitary Inspector.

Name of Child.	Address.	Remarks.

Head Teachers, on the receipt of this Card (after noting contents) should at once forward the same to the School Attendance Officer.

A very useful pamphlet on Infectious Diseases has also been drawn up by the Medical Officer to the Kettering School Board, and issued to the Board's Teachers, which may well be imitated in other districts.

Thus the means within the powers of any local sanitary authority for minimising or controlling the effects of the introduction of infectious disease into a district are many, apart from those of mere sanitary visitation and disinfection.

On the subject of disinfection, indeed, much might be said as to the ordinary methods employed, and the facilities afforded in the several districts for the disinfection of bedding and clothing. It is much to be regretted that there are so few steam-disinfectors in use in the County, and that moveable disinfectors of this kind have not been obtained for use in the Rural Districts. Disinfection is an essential means for preventing the conveyance of infection from a sick person to the healthy through the medium of clothing or bedding, and it is very important that the matter should receive the earliest possible attention. Without there be systematic and efficient disinfection of clothing, bedding, and premises, the period of quarantine in which a person recovered from an infectious sickness should be kept must manifestly be an uncertain one. Without complete disinfection, moreover, there can be no certitude that the infective germs of disease have been so destroyed as to prevent the possibility of their giving rise to a recrudescence of the disease within a short period of time.

This matter of the means for efficient disinfection in the County is a sufficiently large and important one to form the subject of further enquiry and report; but, in the meantime, it is proper to draw attention to the fact that the need for fixed or portable apparatus, for properly carrying out the disinfection of infected clothing and bedding, has been commented on in the Annual Reports of more than one Medical Officer of Health of Districts within the County.

CHARLES E. PAGET,
County Medical Officer of Health.

Northampton,
September, 1899.